# Lettsomian Lecture

ON THE

# PLES OF TREATMENT IN RELATION TO DISEASES OF THE NERVOUS SYSTEM.

*ing the Third Lettsomian Lecture[*] in 1926, delivered before the Medical Society of London on March 15th*

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IN the two previous lectures I have been chiefly ncerned with principles governing treatment in rious diseases of the nervous system in which ructural defects of the brain and spinal cord, turally accompanied by striking departures from eir normal function, are outstanding features. In ew of the limitations to repair which are inherent highly specialised nervous tissues, it has often en necessary to content myself with the considera- n of measures, either frankly preventive in nception, or favouring a process of physical or ychological adaptation to permanently altered nditions.

It is now my purpose to discuss governing principles relation to conditions in which disorders of function, ssibly accompanied by physical or chemical changes yet unexposed, command our attention. Prevention d adaptation must again receive their due, and both ust largely rely for their efficacy on anticipation, well as early recognition of morbid symptoms.

The prevention of head injuries, although a matter uch gravely concerns the League of Nations and mperance societies, can hardly be reckoned among r professional duties, but the prevention and treat- ent of the effects produced by head injuries are sponsibilities with which we are frequently faced d which we cannot shirk. The results of blows flicted on the cranium are, especially in their mediate consequences, too numerous and various r general consideration now, even were I disposed courageous enough, which I am not, to trespass on field of surgery so thoroughly explored by Mr. Wilfred otter. The subject is one, however, which may be proached from another direction by a physician ho is sometimes called upon to deal with the remote fect of such injuries, and who, rightly or wrongly, inks that they are often avoidable.

### PROPHYLACTIC IMPORTANCE OF REST AFTER CONCUSSION.

The particular type of head injury with which I am ncerned to-night is that in which a blow on the anium results in a period of unconsciousness, short r long, unaccompanied by any serious defect in the ones of the skull. Such events are very common in ery-day life, and all doctors must meet many xamples of them in the course of their practice. he period of unconsciousness is attributed to con- ussion, and its importance as evidence of injury o the brain is often too lightly assessed compared ith the attention paid to a fracture of the skull. But it must be remembered that the brain is a very elicate, and sometimes important, organ, whereas he cranial bones only serve a useful purpose in that hey help to protect the brain from direct injury.

My purpose in raising the question of the treatment f head injuries will be best served by the description f some typical although fictitious cases :—

> A man is thrown from his horse, landing with his head on hard ground. He lies motionless and unconscious for a few seconds or minutes, picks himself up, feels dazed, but, in spite of a certain amount of headache, manages with or without assistance to reach his home. He feels a bit shaken next day, but his headache is less severe, and he naturally expects to be well again very soon. As a matter of fact, he finds that his expectations are not fulfilled, and hardly a day passes without some hours of headache, generally brought on or increased in severity by exertion, mental or physical, by fatigue or excitement. The headache is either of the bursting character, especially in the early stages, or, later, is described as pressure on the vertex or tightness round the temples. Before very long the patient becomes anxious, irritable, lacking in concentration and decision, complains that his memory is at fault, that he cannot sleep, and that he thinks at times that his mind must be giving way. His condition can be best described as that of post-concussional headache complicated by anxiety neurosis.

This miserable state would have been prevented had the patient gone straight to bed, remained at complete rest for a period proportionate to the severity of his injury, and only resumed the activities of life by carefully graduated steps.

The difficulties experienced in carrying out this preventive treatment are often provided by the patient, who either refuses to regard his accident as in any way serious or who, having been X rayed and assured that there is no fracture of the skull, takes no interest in what may have happened inside it. Judging from one's own experience, it is probable that at least another 50 years will elapse before the lay mind is sufficiently educated to realise that the soft structures within the cranium are of more functional importance than their osseous envelope. Possibly this prophecy might be falsified if the profession not only recognised such an obvious truth, but consistently and firmly used it as the basic principle of their practice.

How long a period of complete rest should be insisted on is a question not easily answered. During the war, when many of such patients were under military discipline, I saved myself a lot of trouble, and the victims of head injuries, such as we are describing, much suffering by ordering as a routine measure a month in bed for each case. In civil practice this is not possible, and the amount of rest may be reasonably regulated by taking into account the extent of amnesia, especially of the retrograde variety, disclosed by the patient, and also the severity of the symptoms immediately following the accident, the period during which he was dazed, confused, or exhibited the symptoms which we place under the category of cerebral irritation. In any case, the resumption of activity should be gradual, and can be usefully employed as a test for the adequacy of the rest which has been enforced. There can be no other alternative treatment, and its simplicity is its chief and only objection. As an adjunct a dose of bromide, 10 or 15 gr., should be given twice daily, partly in order to allay restlessness and depression, partly as a prophylactic measure against possible epileptic tendencies. It is even desirable that this medicinal precaution should be persevered with for some months after active life has been resumed. May I add that the success of the treatment I have outlined is much more likely to be achieved if the patient is taken into the confidence of the doctor and is frankly told that the measures are necessary, not so much for symptoms which are present, but in order to prevent months of suffering in the future.

We have yet to consider the treatment of the patient who has neglected or failed to seek advice for weeks or months after his injury, and who comes for assistance in the condition I have described as that of post-concussional headache complicated by anxiety neurosis. Quite briefly he will require rest in bed, more lengthy and perhaps more secluded than that already referred to, the administration of suitable sedatives and analgesic drugs, and the application of psychotherapy appropriate to his individual anxiety or anxieties. For it must be remembered that the psychological picture may by this time have become complicated by additional complexes, even by some, perhaps, of sexual complexion.

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[*] Lectures I. and II. appeared in THE LANCET of Feb. 20th and March 6th respectively.

### "CONTUSION HEADACHE."

May I now remind you of another not uncommon sequel to a comparatively slight head injury, the pathology of which has been lucidly expounded to this Society within recent times by Mr. Trotter.[1] In contrast to the concussion effects just described, this variety has been sometimes referred to as "contusion headache." A contusion headache may occur as a separate entity, but not seldom it complicates the concussion picture so that we find a patient suffering from both conditions at the same time.

Let me take for consideration an uncomplicated example. A man receives a blow on the head from a weapon or missile which hurts and perhaps dazes him, but produces no concussion, no loss of consciousness. Not unnaturally he suffers from a headache which persists for a short or long period but which clears up leaving him apparently none the worse for his injury. The skull may or may not have been cracked by the blow, but there is no evidence of a depressed fracture indicating the necessity for immediate operation. In fact, the outward and visible signs of trauma may be limited to a local bruise. The patient soon resumes his ordinary duties, but finds that he is subject to severe headaches, more or less localised to the site of injury and associated with coincident, and, perhaps, extreme, tenderness of the scalp in its neighbourhood. These bouts of pain are clearly excited by physical exertion, especially such forms as entail stooping or rapid changes of cranial position. The pain is generally described as like toothache in character, and each bout is often of not more than a few hours' duration. Their frequent recurrence and severity are, however, sufficient, as time goes on, to interfere very seriously with the patient's activities and pleasures; not infrequently they give rise to mental disturbances amounting to maniacal outbursts or melancholic depression. In some cases a period of complete rest may suffice to give relief, especially if it is resorted to at an early date. In others rest fails to bring about the desired result, and an operation is the only measure calculated to cure the patient of his suffering and, perhaps, to save his reason. The operation is a simple one, as its objective, according to Mr. Trotter, is to decompress at the site of injury and so to establish a more normal circulation in the bruised tissues which are exposed to view by the opening in the skull. Resolution, long delayed, takes place, the headaches cease, and, if thought desirable at a later stage, the gap in the bone may be closed by a bone graft or other mechanical means.

The principles governing the treatment of minor head injuries are so simple and, in the eyes of those ignorant of their sequelæ, so superfluous that they are frequently neglected. Their importance from the point of view of prophylaxis is far-reaching and, in particular, extends to the subject to which I now propose to draw your attention.

### TRAUMATIC NEURASTHENIA.

It is not a far step from head injuries to traumatic neurasthenia, and, in considering the latter, what has been said of the former must necessarily be kept in mind. I make no apology for bringing forward this subject, or, indeed, for reiterating the views I have before expressed in connexion with it, as there is no problem in medical practice about which more misunderstanding and confusion of thought and speech have long prevailed. Nor does this fog beset only the minds of doctors; it exercises a bewildering influence on the mind of the public, and above all on the matter-of-fact and unimaginative mentality of the legal profession. To listen to the cross-examination of medical witnesses on the topic of traumatic neurasthenia in a court of law can only be compared to being present at the performance of a farce, a comedy, and a tragedy combined in one play, and it is difficult to say whether its humour or its pathos makes the more appeal.

In order to arrive at some principles for our guidance in the prevention and treatment of traumatic neurasthenia, it is essential to form a clear conception of neurasthenia and of its causal relationship to trauma. Experience teaches us that the term is applied chiefly to two large groups of cases, both of which present almost constant clinical characteristics. The first group comprises patients who have sustained an injury to some part of the body, more frequently but not necessarily the head, of varying severity. They present the picture which we commonly associate with an anxiety neurosis, the only difference being that they attribute all their troubles to the injury. They complain of constant "pressure" headache, insomnia, loss of energy and ability to concentrate, of giddiness, tremors, and fears, as well as of pain and tenderness at the site of injury, be it the foot or the head. Their appearance is one of misery and apprehension, but the most careful examination reveals no evidence of organic disease. The second group is of smaller dimensions. Its members walk into your room leaning forward on a stick grasped in one hand with the other placed over the lower part of the back. You know at once that the site of injury, a strain or a blow, is the spine. In many cases the real origin of the trouble is a sharp attack of lumbago coming on acutely, as it often does, while making some physical exertion. These patients, like those of the first group, may present symptoms of anxiety, and complain bitterly of pain and tenderness over the spinal column and neighbouring muscles. Examination, again, reveals no evidence of organic disease.

There are two points in connexion with both these groups of cases which we cannot afford to overlook. The neurasthenic symptoms are not the monopoly of patients who have sustained injuries to the head or even to the spine; a serious obstacle to the belief that they are produced by physical disturbances in the nervous system. On the other hand, it is not unreasonable to suppose that the awe with which an injury to the skull or spine is popularly regarded may suffice to account for the frequency with which such injuries are followed by the development of an anxiety neurosis. In the second place there is no constant relationship between the severity of the trauma and the incidence of the neurotic sequelæ, but it is not without significance that injuries resulting in total disablement, such as a fractured limb, are rarely complicated by the anxiety features of traumatic neurasthenia.

On what does the incidence of neurasthenia as a sequel of trauma depend? No doubt some part must be played by the mental make-up of the patient. An inherent mental instability must be regarded as a factor which cannot be overlooked, but it cannot be blamed in all cases, and we must look elsewhere for a more important determining cause. Reviewing accidental injuries and their consequences generally, it is impossible to avoid the conclusion that the factor common to the great majority of cases of traumatic neurasthenia is the knowledge that the responsibility for the trauma can be placed on shoulders other than those of the victim. The responsibility falls on the employer, on a corporation such as a railway company, or on the State. Traumatic neurasthenia is rarely met with among persons the responsibility for whose injuries cannot be relegated elsewhere, although, as I have already pointed out, a neurasthenic state is not an uncommon sequel in cases of neglected concussion.

But while laying most emphasis on the part played by responsibility, there are other factors which contribute in many cases to the development of the anxiety neurosis. May I take the liberty of quoting some passages from a former paper of mine in order to illustrate how the handling of these cases in their early stages influences their course and prognosis, and to lay stress on certain principles of preventive treatment?

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[1] Transactions, vol. xlvii., p. 270.

"Smith is injured in an accident occurring in the course of his employment. The accident took place in such a way that it caused a considerable emotional disturbance—that of fear. This is often called shock, but is distinct from surgical shock. The injury caused pain, and the doctor, on examining him, said: "By Jove, you have had a narrow squeak: an inch to the left and the blow would have broken your back." A restless night, during which he remembers that there were only three men doing what ought to have been done by four. This gives rise to the sense of injury. His employers are responsible for his suffering. A mate comes to see him a day or two later, and reminds him that Jones had a somewhat similar accident and was dead within a year. (It is immaterial from their point of view that Jones died of influenza and pneumonia.) His wife is a plucky woman and sympathetic, and also much incensed against the employers because of the neglect to supply sufficient labour for the job. She makes him comfortable at home, in spite of shortened means. His injury is really slight, and after going to the hospital or his doctor twice a week for two or three weeks, there is no physical disablement. But the seeds which were planted have grown, and will continue to grow, with the result that you soon have a condition of anxiety neurosis in full bloom. If the doctor said he had had a very narrow squeak, it is obvious that he must have been very seriously injured, and he could not be well in a month. Even if he appeared well there was always the possibility that something else would develop. Did it not in the case of Jones? It must be remembered that to the lay mind trauma is still the most important and universal ætiological factor in medicine, just as it was in medical text-books 50 years ago. A pain here or a pain there is sufficient to keep him on the alert for complications and sequelæ. Fear and anxiety keep him awake at night, and so the vicious circle is formed. Beneath the surface all the time is the knowledge that his employer was responsible for making him ill, and is still responsible for getting him well. Yes, he will go into hospital for treatment, but under protest. He will come out of the hospital worse than he went in, and more convinced thereby that the injury he received was far more serious than other people, particularly the insurance officers, realised. Weeks, months, and, perhaps, a year or two pass by. He has either become incurable, or is tempted by a lump sum of money in full compensation for all his claims. Accepting this, he has unwittingly resumed responsibility for his health, and sooner or later health is restored to him.

The case of Mr. Robinson, however, is rather different.

He was in a train returning from business when a collision occurred. He was thrown across the carriage and considerably bruised, and not a little frightened. What with his bruises and fright he had several restless nights, in the course of which he explained to his wife the dastardly neglect of the railway company in allowing an hour to elapse between the collision and his being conveyed to a place of safety. This indignation grows as his bruises and fright disappear. He feels disinclined to return to business, and his doctor has hinted that two or three weeks at the seaside in order to get over the "shock" are advisable. After all the company must pay for this, and it is a long time since he had a good holiday. On his return he is not yet inclined to work, and, meanwhile, the question of how much compensation is due to him has become, and is still, a matter of dispute between his and the company's lawyers. He is given to understand that he is suffering from traumatic neurasthenia, and it is impossible to say when anyone may recover from that disease. Anyhow, the company is responsible not only for the disease, but for financing him until he is well. Litigation threatens, further medical examinations ensue, a sum is offered; shall he accept it? More sleepless nights, and the picture of anxiety neurosis, complicated by the sense of injury, is complete.

Now let us look for a moment at the other side.

A hunting man sustains a severe concussion as the result of a fall. His doctor tells him that he was within an ace of breaking his neck. He has nobody but himself or his horse to blame, and accepts the medical dictum in the spirit that a miss is as good as a mile. After a few days' rest he is feeling so much better that he wants to know when he may get up, and how long it will be before he can hunt again. Provided he is kept long enough at rest there will be no neurasthenia. If, on the other hand, he is up too soon, headaches will develop, and he will find he is very easily tired and quite unable to concentrate. A further period of rest would get rid of these symptoms, but neglect of such precautions would probably mean the establishment of a neurasthenic state from which recovery may be slow.

A consideration of these stories provides us with a wholesome warning in regard to what is better left unsaid when dealing with a patient immediately after he has been injured, and should indicate the kind of psychotherapy which can be advantageously practised in the course of subsequent attendance. It serves also to illustrate the profound part played by the patient's sense of injury towards those whom he deems responsible for his suffering, an attitude which has been fostered in some instances, no doubt, by the more permanent feeling associated with class distinction. This sense of injury forms one of the chief obstacles in the path of successful treatment. There is a wrong to be put right, and, until this has been done to the satisfaction of the wronged man, he is not likely to turn his attention away from his injury to the ordinary affairs of life.

If the views I have expressed concerning the pathogenesis of traumatic neurasthenia are accepted, our business is to exercise an intelligent anticipation of its early signs, with a view to checking further developments. When the condition is established, we must not underestimate the difficulties in the way of successful treatment, least of all that which concerns responsibility; it has already been recognised to some extent in the admission often made that the first step towards a patient's recovery would be the settlement of his claim. This admission is generally interpreted as evidence of what might be expected from the satisfaction of a greedy desire. I venture to think that the shifting of responsibility for the patient's recovery on to his own shoulders plays at least as important a part in the subsequent history of the case.

### MODERN PSYCHOTHERAPY.

It is with great diffidence that I approach the subject of psychotherapy, a diffidence based on my ignorance of many of its various doctrines and of the meaning of many of the technical terms which are employed by those who practise it. I am old enough to suspect that the personality of the psychotherapist is of more importance than the doctrine on which he bases his treatment; I am young enough to be sure that concealed in the terminological maze of modern psychology there are many substantial truths which are destined to find their way out and to receive in turn the recognition they deserve. Even as it is, in spite of much abuse, deserved and undeserved, in spite of much partial and impartial criticism, the advances which have been made in the practice of psychotherapy during the last 25 years compare favourably with any advances in other branches of medicine. Although the whole subject is still in its scientific infancy, and still unable to control its emotional tendencies, the time has come when it might be profitable to consider, and perhaps to define tentatively, the scope of psychotherapy. In the course of these lectures, I have made it clear that, in my view, psychotherapy, using the word in its widest sense, is an essential factor in the treatment of all patients suffering from organic disease, and that, for our professional reputation's sake, we should be careful to recognise and acknowledge, at any rate to ourselves, what we owe to it and what to other remedial measures, for any successes we may attain. But psychotherapy, using the word in its more technical and specific sense, is a branch of practice concerned chiefly with the treatment of so-called functional, but better-called mental, disorders, and it is my purpose this evening to discuss its comparative value in this relationship. The ethical aspects of psychotherapy, especially in relation to psycho-analysis, have received perhaps as much attention as they deserve, and have been the theme of many blood-curdling and sometimes mirth-provoking stories. Perhaps for this reason the profession has been left a little confused in its ideas as to the efficacy of this method of treatment in different forms of mental disorder.

In order to clear the deck, as it were, for further discussion, we may agree, perhaps, that all patients whose symptoms are frankly hysterical are fit subjects for the art of psychotherapy in the forms of suggestion, education, or investigation. The same remark applies with equal force to patients suffering from an anxiety neurosis, but this brings us without further delay to a position in which there is certainly much confusion of nomenclature and probably a widespread want of clear thinking. I find, for instance, that it very rarely occurs that a patient is sent to me with the diagnosis of "anxiety neurosis," and that never does one come with the diagnosis of manic-depressive psychosis. Both groups of patients arrive with the label of "neurasthenia" hung indiscriminately round their blushing necks. This sounds like a terrible indictment of professional knowledge, but it can be made without hesitation and even without fear of contradiction.

How many doctors realise that among their neurasthenic patients are a number of examples of the milder forms of the manic-depressive psychosis? How many doctors realise that these are the "neurasthenics" who wear their patience to its last thread and yet invariably recover? One more question. How many doctors and how many of these patients themselves realise that the treatment prescribed has had nothing to do with their recovery?

Let us consider the last question first. The depressive is a patient who invariably recovers, provided he is protected from suicide, but it is beyond our ken to say when the recovery will take place. Naturally the person who is in attendance at the time of recovery will receive credit which is not his due. Doctors, quacks, and faith-healers share in the distribution of this bonus. Sometimes the patient, when depression again overtakes him, has resort to the doctor or quack who cured him before, but he soon realises that this time the same treatment is ineffectual, and further experiences of similar character generally convince him that his recoveries have been spontaneous.

The other two questions are only concerned with diagnosis, a subject intimately connected with the principles governing the practice of psychotherapy. The depressive patient differs from the patient with anxiety neurosis in many ways, but the diagnosis is not always easy unless a careful history is taken. From the latter we may learn of one or more earlier attacks of depression and that, in the intervals, the patient is often more energetic, more cheerful, and even less anxious and responsible than the normal. The attack of depression may have no apparent cause or may be preceded by a period of overstrain. The gloom is deep, varies little in intensity, and is often associated with much self-reproach for particular misdeeds in the past or with a general sense of inferiority. The patient is less concerned with his physical condition than with his mental misery, although he may lose weight and suffer from dyspepsia and constipation. Probing into his troubles only makes him worse, and is often a dangerous procedure capable of driving him to suicide. It is impossible for him to believe that he can get well and he loses all interest. He takes his food without relish, takes walks without enjoyment, and can derive pleasure from nothing. The only comfort of which he is sensible is the sympathetic encouragement and the patient hearing he receives from his doctor or his nurse, and yet neither gives him real relief.

These are the chief characteristics which distinguish the manic-depressive from the anxiety neurotic, and the diagnosis is a matter of great importance in regard to treatment. The manic-depressive is made worse by any form of systematic psychotherapy involving mental probing and investigation. The anxiety neurotic cannot be cured without the employment of some such method of treatment. The only psychotherapy permissible for the depressive patient is the sympathetic encouragement and the daily audience of his woes to which I have already referred. Add to these the provision of a sufficiency of rest, food, and sleep and the list of measures known to us, which will ensure the patient a safe passage through his period of misery, is complete.

Lest there should be any misunderstanding let me say at once that my remarks have reference only to the milder forms of the manic-depressive disorder, not to the severe forms met with in asylum practice. But these patients are very numerous; they infest our consulting-rooms and the out-patient departments of hospitals; they mingle with us socially, and we count many of them among our more moody friends. Great is the power of a name! I cannot help thinking that, had this form of mental disorder carried any less ugly designation, its character would ere now have been more generally recognised and its diagnosis more frequently arrived at. But it goes against the grain to call even one's worst enemy a manic-depressive, and it is high time that a less opprobrious epithet is found for patients who sometimes command our respect and affection as well as our sympathy.

Time will not permit me to discuss at length the principles governing the use of psycho-analytical methods in relation to all functional disorders, and I shall content myself with referring very briefly to only one or two. The compulsion neuroses and the phobias are examples of disorders which are frequently dealt with on these lines and which respond to such treatment in various ways. Many cases of phobia certainly receive benefit and some are permanently cured; rarely does any harm result. Patients suffering from compulsion neuroses, on the other hand, are less certain quantities, and it is probable that faults in the technique of analytical methods may be responsible for some disastrous results following their employment, and that experience will eventually teach us how the technique can be improved so as to ensure more universal success. A question which has interested me for a long time is whether spasmodic torticollis is a functional disorder, in the sense that it can be cured by any psychotherapeutic measures, and I am bound to confess that it has not yet been answered to my satisfaction. So obstinate is it to all other methods of treatment that further efforts on psycho-analytical lines should be encouraged so long as evidence of harmful results is not forthcoming. The occupation neuroses may, perhaps, be placed in the same category, although I entertain grave doubts whether in a severe case of writer's cramp, for instance, any cure is possible in the sense that the patient can return with impunity to his scriptorial excesses.

As a preface to my first lecture I referred to the professional success enjoyed by John Coakley Lettsom 150 years ago, and suggested that his success must have been founded largely on his personality and on empiricism. The art of medicine has advanced far since his day, and personality, always to some extent an inherent and intangible gift, can be cultivated in suitable soil by the study of modern psychology; empiricism is rapidly giving place to more scientific measures. In the course of these lectures I have insisted on the value of being guided by certain principles in the treatment of patients suffering from diseases of the nervous system, and have chosen, by way of illustration, the simpler and more common rather than the more intricate and rarer problems with which we are confronted. In these days we are all, practitioners and students alike, appalled by the ever-growing mass of facts and theories in which the art of medicine is becoming involved, and by the hopelessness of attempting to keep pace with advances in all its branches. It is inevitable, therefore, that we must each of us turn more and more for guidance to principles which are based on sound physiological, psychological, and anatomical foundations, and that the student of to-day and of the years to come should never fail to master these even at the expense of much detailed knowledge of disease. On such foundations the knowledge of disease is easily built up; without them no wealth of experience can ever produce the type of medical man who will lift the profession above rivalry with quacks to a position in which it may secure and hold the trust and confidence of the public.

### THE THIRD* (1926)

# Milroy Lecture

### ON

# EXPERIMENTAL EPIDEMIOLOGY.

*Delivered before the Royal College of Physicians of London on March 9th*

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IN the previous lectures it has been shown that it is possible to initiate an experimental epidemic among mice, and to maintain its activity for an apparently unlimited period of time. Is it possible to modify the course of events in the opposite direction, to alter our experimental conditions in such a way that an epidemic fails to develop after we have brought together the parasites and their hosts, or to intervene after a wave of mortality has commenced its rise and bring about its premature fall?

## THE EFFECT OF DISPERSAL.

In the experiments on the initiation and maintenance of epidemics it was found that the numerical relation between infected and susceptible mice, and the rate of immigration of the latter, exerted a decisive influence on the mortality-rate. It was natural to inquire whether any form of redistribution of the population at risk, carried out after the initial admixture of infected and susceptible animals, would prevent the occurrence of a wave of mortality, or bring to an early close an epidemic that had already developed a high death-rate.

Two experiments on these lines have been completed. In each case the infection studied has been mouse-typhoid, and the redistribution has consisted in the dispersal of the population at risk into smaller groups housed *in separate cages*. In the first experiment of this kind,[5] which is recorded in Chart 12, the dispersal was carried out during the pre-epidemic phase On the day when the experiment commenced, 305 normal mice were added to 24 survivors from an earlier epidemic. During the following week there were 15 deaths. Of these, 11 occurred among the normal mice and four among the presumably infected animals. Seven of the dead mice were eaten, seven were examined post mortem with negative results, while one of the survivors, which died on the sixth day, was found to have succumbed to typical mouse-typhoid. On the eighth day redistribution was carried out; 294 of the added mice were then alive. Of these, 100 were placed in one large cage; 94 were dispersed into four groups, three of 25 and one of 19 mice; 100 were dispersed into ten groups, each of ten mice. The mortality was observed for the following 68 days. On the sixty-ninth day the survivors from each of the two dispersed herds were re-aggregated in a single cage, and the course of events was watched for another 93 days. Chart 12, which gives the daily percentage of survivors for each of the three herds, carries the record to the 120th day of the experiment. In the undispersed herd the epidemic developed rapidly, and had run its course by the sixty-eighth day, when the survivors numbered 5 per cent. of the original population. The herd, which was dispersed into four groups, derived no significant advantage from this dispersal: 9·6 per cent. remained alive on the sixty-eighth day. The herd which was dispersed into ten small groups suffered a far lower mortality; on the sixty-eighth day the survivors from this herd amounted to 55 *per cent.* of the mice originally at risk. In the period which followed re-aggregation this herd suffered further loss. It will be seen from the chart that the curve recording the daily $l_x$ values continues its downward course; indeed this curve, from the tenth day of the experiment *onwards, approximates closely to a straight* line. When the experiment terminated, on the 161st day, the survivors from the undispersed herd numbered 2 *per cent., from the herd divided into four groups* during the period of dispersal they numbered 2·1 per cent., from the herd dispersed into ten small groups *they* numbered 24 per cent. These figures give the total mortality. The specific mortality, which excludes those deaths in which no evidence of enteric infection was found post-mortem, was 87 per cent. in the undispersed herd, 83·7 per cent. in the four-group herd, and 18 per cent. in the ten-group herd.

Thus, while *dispersion into* relatively large groups during the pre-epidemic phase had little influence on the spread of enteric infection among the mice at risk, dispersion into many small groups had a marked inhibitory action. Re-aggregation was followed by a further spread of infection among this herd, but on the 161st day after the experiment started they still showed a relatively low mortality from this disease. Before discussing the significance of these results, we may consider another experiment, in which dispersal was carried out at a later stage of the *epidemic process*.

This epidemic, which is recorded in Chart 13, was initiated by adding 420 normal mice to 60 others, among which enteric infection was actively spreading. This mixed population was allowed to remain in a large cage for seven days, during which time 45 deaths from mouse-typhoid occurred among the 420 added mice, showing that an epidemic was well established. On the eighth day 360 survivors from the 420 mice were divided into four herds, each of 90 animals. Two of these, recorded in the chart as P 1 and C 1, were each kept as a large group in *a single* cage. The two others, referred to as P 2 and C 2, were each dispersed into 18 small groups, each of five mice. The *survivors from* each of these dispersed herds were re-aggregated in a single cage on the forty-second day, and the experiment was continued until the eighty-fourth day. The mice constituting the herds P 1 and P 2 were injected with a bacteriophage active *against B. aertrycke*, but this fact does not concern us here, and it will be seen from the chart that their fate did not differ from that of the mice of the control *herds* C 1 and C 2, which received no treatment. Confining our attention to the effect of dispersal and re-aggregation, it is clear that distribution into many *small groups during the epidemic* phase has no such marked effect as was observed when dispersal was carried out before any wave of mortality had *been developed. During the first three* weeks there is no significant difference between the course of events in the four herds. The undispersed herds suffered, during this period, mortalities of 72·2 and 67·8 per cent., and the two dispersed herds mortalities of 64·4 and 62·2 per cent. From this point onwards, however, the $l_x$ *curves* diverge. The two curves recording the proportion of survivors in the dispersed *herds show that change* in direction which we have already noted in describing other epidemics of mouse-typhoid, while the two curves *recording the fate* of the undispersed herds continue their downward *course for* some time longer. On the forty-second day, when the mice in the dispersed herds were re-aggregated, the percentage of survivors in these two *herds* amounted to 25·5 and 24·4 per cent., and in the two undispersed herds to 11·1 and 7·8 per cent. In this case the re-aggregation of the dispersed *herds* was not followed by any marked rise in the death-rate, though *a* few deaths occurred between the forty-second and eighty-fourth days. The percentages *of* survivors on the eighty-fourth day were 17·8 and 13·7 per cent. among the dispersed herds, and 8·9 and 2·2 per cent. among the undispersed herds. In all cases the mortality was almost entirely specific.

Considering these two experiments together, it appears that dispersal carried out during the earlier very few or none will die within a very short interval or will succumb after a certain limit of time. As Webster himself has shown, a curve essentially similar in form is obtained after inoculating mice with a poisonous metallic salt.

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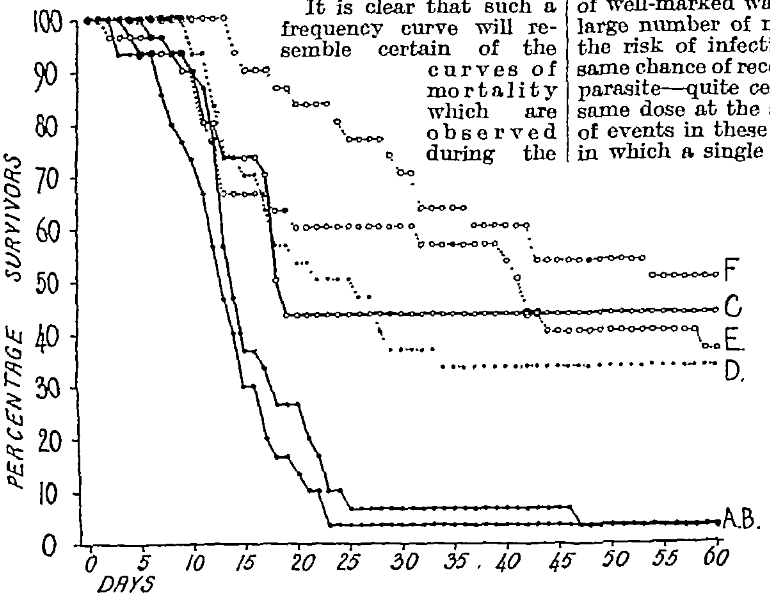
* *The first and second lectures* appeared in THE LANCET of March 6th and 13th respectively.

CHART 14.



It is clear that such a frequency curve will resemble certain of the curves of mortality which are observed during the course of an epidemic. Webster[27] has noted this resemblance between the curves obtained in his own inoculation experiments and some of those recorded by Amoss[21] in the experimental epidemics in which mice were added irregularly to an infected population. From this resemblance he has drawn the conclusion that the form of the mortality curves in the experimental epidemics depends upon the varying degree of susceptibility within a mouse population simultaneously exposed to a fixed dose of mouse-typhoid bacilli. We are not certain how much significance Webster attaches to this suggestion. If he implies that very occasionally, and under very exceptional circumstances, a large number of hosts may simultaneously receive the same dose of a virulent organism, and that, should such an event occur, the form of the distribution in time of the resulting deaths will be mainly determined by the variable resistance of the hosts, then we have no criticism to make. That Webster does set some limiting condition to the application of this hypothesis to natural or experimental epidemics is clear from several of his papers; but, unless we have misread him, he regards this variation in normal resistance as the factor which determines the time-distribution of deaths in any well-marked wave of mortality during an experimental epidemic of mouse-typhoid. In fact, he uses a term which we certainly cannot accept, in speaking of this frequency curve as "the simple epidemic curve."

It is not necessary to discuss this question in any detail. In the numerous experiments which we have described above, in which the daily addition of normal mice to an infected herd was associated with a series of well-marked waves of mortality, it is clear that no large number of normal mice, hitherto unexposed to the risk of infection, were suddenly exposed to the same chance of receiving any given dose of the bacterial parasite—quite certainly, they did not all receive the same dose at the same moment of time. The course of events in these experiments, and in many of those in which a single large batch of mice were added to infected companions, indicates clearly that the rise of a well-marked wave of mortality is preceded by a wide spread of infection, which will probably have modified in many ways the original condition of the animal hosts at risk.

The successful analysis of the epidemic process is, in our view, unlikely to resolve itself into any such simple formula. We should note that Webster himself favours a more complex hypothesis, in connexion with the spread of a pasteurellar infection among rabbits.

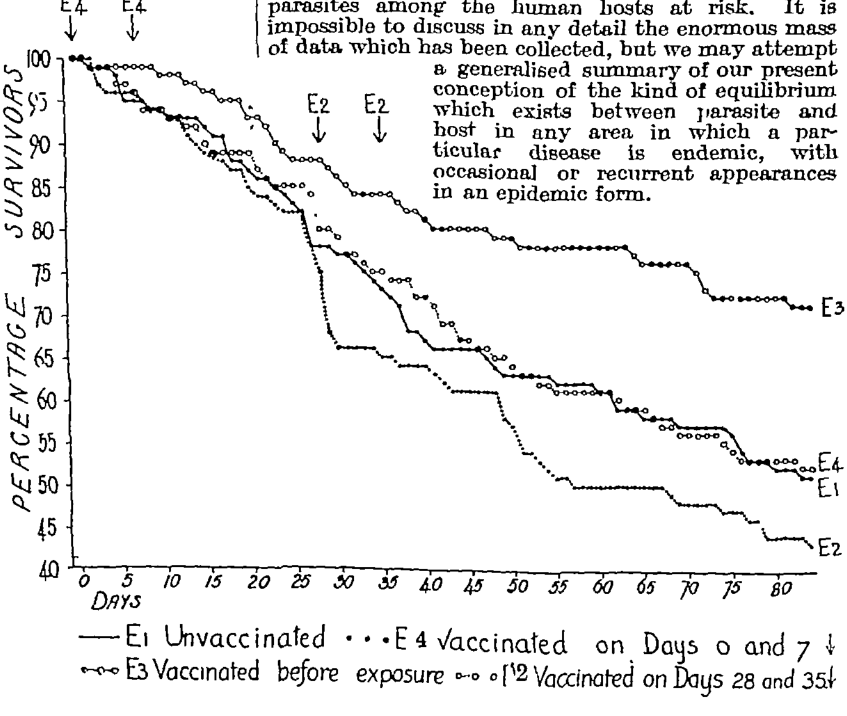
## EPIDEMIC SPREAD OF INFECTION: SOME GENERAL CONSIDERATIONS.

If we look beyond our experimental results, and include in our survey the bacteriological data which have been obtained in the observation of naturally occurring epidemics, can we, without too adventurous an application of the dangerous argument from analogy, obtain any further suggestions as to the nature of the epidemic process?

The results which have been obtained along two lines of inquiry appear to us to be particularly pertinent to the points at issue.

The first of these is that which has been developed in connexion with the so-called carrier problem, and which has led to a steady accumulation of knowledge concerning the distribution of certain bacterial parasites among the human hosts at risk. It is impossible to discuss in any detail the enormous mass of data which has been collected, but we may attempt a generalised summary of our present conception of the kind of equilibrium which exists between parasite and host in any area in which a particular disease is endemic, with occasional or recurrent appearances in an epidemic form.

CHART 15.



It has become clear that, where these conditions exist, the clinically recognisable cases of disease form only a fraction of the infected individuals of the host species. Adequate bacteriological examination will reveal numerous hosts who are suffering from some atypical disturbance of health, and from whose mucous surfaces or excreta the specific organism of the disease can be recovered, and others, still more numerous, who are harbouring the parasite without any definite evidence of illness. If we examine adequate samples of cases of disease, of contacts with atypical lesions or symptoms, of healthy contacts, and of healthy non-contacts, we shall generally find a descending order of frequency of the presence of the specific parasite; but in many cases—and this is a point of particular importance—we may obtain equal values for the carrier-rate in healthy contacts and non-contacts within an epidemic area, so that there is no reason to suppose that contact with a clinically recognisable case of disease is the main mode of infection leading to the carrier state.

The practical significance of this distribution of different states of equilibrium between the individual hosts and the parasites they harbour will, of course, depend on the relative frequency of the various classes, and it is here that more knowledge is urgently required. In some infections, such as cerebro-spinal fever, we know that the cases of disease are in an insignificant minority, that they are, to use a convenient but equivocal term, an epiphenomenon. In this case the carrier-rate among the population at risk may be carefully observed as it rises from a figure of a few units per cent. to 20 per cent. or more, before a single case of meningitis occurs, and the actual outbreak of disease may number only a few cases among many thousands at risk. The real epidemic, as Arkwright has pointed out, is an epidemic prevalence of meningococci in the naso-pharynges of the population at risk. No purely clinical description of the course of events could ever have been other than a revelation so partial as to obscure all essential truth.

We can be fairly sure that poliomyelitis and encephalitis lethargica behave much like cerebro-spinal fever in this respect, because the bacteriological findings in the latter disease have taught us how to interpret the clinical observations in the two former. In the case of poliomyelitis, indeed, the carrier state has been shown to exist. It is probable that diphtheria, and perhaps scarlet fever, show a higher ratio of cases to carriers, though this ratio is certainly much less than unity. It is possible that such a disease as small-pox is at the other end of the scale, and that here the carriers are in an insignificant minority, though none will deny the frequency of the atypical case. I would hazard the personal guess—it is nothing more, and I have found few supporters among those best qualified to offer a clinical opinion—that this relation only obtains in an area in which small-pox is introduced after a considerable period of complete freedom from this disease, and that when we are faced with an annually increasing prevalence, as we now are in this country, we may feel fairly confident that the carrier is there, although he receives no professional recognition. It would appear that the more we have learned of the bacteriology of any particular infective disease, the more probable is it that the distribution of the parasite is far wider than the distribution of the disease.

The second line of inquiry has been more recently developed, but has already yielded evidence of the greatest significance. The introduction of the Schick test has enabled us, in the case of diphtheria, to add to our study of the distribution of the parasite a study of the distribution of resistance among the hosts at risk. Further, and even more significant than this, we can now observe the gradual immunisation of an infected herd, and correlate the spread of immunity with the spread of the parasite. Such a study as that which Dudley[24] has carried out, on the natural immunisation of the inmates of an institution during the progress of an epidemic of diphtheria, affords an admirable example of the most fruitful kind of field observation based on bacteriological data.

So far as we are justified in combining our experimental data with such field observations as those we have referred to, it would seem that we may regard the epidemic spread of any disease as involving a series of reactions between parasites and hosts which tend to produce quite different results. We may suppose that the primary interaction of the pathogenic bacteria and the susceptible hosts will lead to fatal infections, to infections clinically recognisable as cases of disease, to atypical infections involving some recognisable departure from health, and to latent infection or to the carrier state, in which the host may harbour the parasite over long intervals of time without any sign of disease. The proportions which these various products of reaction bear to one another will be determined by various factors, the isolation and measurement of which is the main object of our experimental inquiry.

We may suppose, by an induction the imperfection of which we fully realise, that those hosts who contract a non-fatal infection will thereafter possess an altered resistance to the specific parasite, and that this alteration will, in general, be in the direction of an increased resistance of varying duration. Using a chemical analogy of doubtful validity, we may regard the reaction as in some degree autocatalytic, since some of the products of the primary reaction will, by their mere presence, tend to accelerate the shift of equilibrium in the direction of the accumulation of infected hosts. But one line of reaction will produce a somewhat different result. If a non-fatal infection leads to immunisation, there may be a gradual accumulation of resistant individuals who may be relatively unresponsive to further doses of the bacterial parasite, and a consequent elimination of those susceptible hosts who form an essential reagent. It would be easy on these grounds to account for the predominant importance of a steady immigration of susceptibles, which has emerged so clearly from our experimental studies.

If such a working hypothesis should be established on a firmer basis by further research, it would appear probable that the relative amounts of those products of an epidemic, which are clinically recognisable as disease or death, will depend upon the relative rate of those reactions which lead to immunisation on the one hand and to disease on the other. If the conditions favour immunisation there may be a widespread epidemic with few cases and still fewer deaths; if they favour more severe infections there may be more disease, and many of the cases may end fatally. If we could determine the nature of the factors which control the rate of these various reactions, we might reasonably hope to interfere successfully in the epidemic spread of disease, by breaking some essential link in the sequence of events on which this spread depends.

## PRACTICAL APPLICATION OF PRESENT KNOWLEDGE.

It seems desirable to make some attempt to consider the efficacy of our present methods of dealing with infective disease, and of possible developments of them, in the light of the knowledge which has so far been acquired. Such consideration is more than a little premature, and I would offer it in the spirit of a famous contributor to the theory of the ills of populations, who says:—

> "By pursuing this plan, however, I am aware that I have opened a door to many objections, and, probably, to much severity of criticism; but I console myself with the reflection that even the errors into which I have fallen, by affording a handle to argument, and an additional excitement to examination, may be subservient to the important end, of bringing a subject so nearly connected with the happiness of society into more general notice."

It is natural first to consider those administrative measures which may be employed to lessen the chances of contact between infected and susceptible hosts, and we may divide such measures into those which are specific, in the sense of dealing with particular diseases, and those which merely aim at a general reduction in opportunities for the transmission of infection.

Under the first heading we must obviously consider the probable efficacy of the isolation of cases of infective disease. The experimental and bacteriological data at our disposal do not suggest that this method has much to recommend it as a measure designed to reduce the frequency of disease and death, due to an infection which is endemic among the population at risk. Without pressing the analogy, we might suggest that such a procedure is rather like the continuous removal of an unpleasant product of a chemical reaction, in the hope that the reaction will thereby be brought to an end. A more hopeful procedure would be to determine the conditions of the reaction, as a preliminary to altering them. The opinion of experienced administrators, on the actual results of the policy of isolation, bears out the expectation based on conclusions from bacteriological observation and from experiment.

The isolation hospital may, perhaps, be defended on the grounds of the benefits which it confers on the sick persons for whose treatment it provides. As a means of lessening the general incidence of infective disease it receives little support on scientific grounds, and apparently finds few friends among those who are best fitted to judge of its practical effects. It is, of course, reasonable to argue that the isolation of a person sick of an infectious disease must of necessity reduce the risk run by a few persons who would otherwise be brought into contact with the patient. This none can deny. The point at issue is whether the spread of infection from diagnosed cases to susceptible hosts forms such a significant fraction of the total spread of infection, which is occurring in the affected area, that the suppression of this one avenue of spread will appreciably lower the incidence of disease.

One point may be here stressed. It seems to us to be no sufficient answer to a criticism of any particular administrative method to suggest that it probably does *some* good, and that while any doubt remains the public are entitled to such protection as the enforcement of that particular measure may possibly afford. The hard facts of the case are that public health administration is expensive in effort, time, and money, and that the total expenditure which can be devoted to the prevention of disease is limited by the available resources. Elementary economy demands that we should apply our efforts in those directions in which we can hope for the best return.

If the isolation of the sick offers little hope of the effective control of infectious disease, can we expect better results from the detection and isolation of carriers? The answer here must be given by experience. In certain diseases, and in small outbreaks in which the entire population at risk is susceptible to unusually complete control, as, for example, in outbreaks of diphtheria in institutions, much may be done in this way. In a few diseases, such as typhoid fever, in which the total incidence may be relatively small, and in which a few chronic carriers may be the only important sources of infection in a large district, the detection and control of these individuals is obviously indicated. In most diseases, and in all cases in which we are concerned with an endemic infection widely distributed among a large uncontrolled population, the detection and isolation of carriers has been shown to be impracticable.

Turning to those administrative measures which bring about a general reduction in the opportunities for the transference of infection from host to host, theoretical considerations suggest, and practical experience affirms, that any measure of this kind is to be welcomed with enthusiasm. Any improvement in sanitation, which ensures a clean water, or milk, or food supply, which reduces the frequency of insect vectors of infection, or which reduces close contact between individuals, may be expected to lead to a reduction in the incidence of those diseases, with the transference of which that particular measure of sanitation interferes. This expectation has been fulfilled whenever an effective measure of reducing the general opportunities for the transference of a particular infection has been established.

This brings us directly to the vexed question of overcrowding. The dominating influence of this factor on the incidence of human and animal disease has been established beyond question. Perhaps one of the most convincing examples of its influence has been provided by the studies which were carried out during the late war on the incidence of cerebro-spinal fever, particularly the observations made by Glover.[67]

It seems possible, however, that we may expect too much in future from improvements along these lines, though they should clearly be exploited to the limits of their possibilities. I would suggest that it might be helpful to adopt a bacteriological definition of effective overcrowding as " any spatial distribution of a population which favours the frequent transference of a particular pathogenic parasite from host to host." On this definition overcrowding, as it is concerned in the spread of infection in typhoid, influenza, malaria, or typhus, would depend on entirely different factors. I think that the absence of some such definition has led to a little confusion in certain statistical inquiries. Some measure of overcrowding must be adopted in calculating its probable influence on the spread of any given disease, and it is usual for the statistician to employ some such measure as the number of houses per acre, the number of families per house, or the number of persons per room. I would suggest that such a measure may entirely neglect the effective overcrowding to which a population is subjected. At the moment, the enemy which threatens us is respiratory disease. Influenza and its allies determine the reigning epidemic constitution. It seems very possible that it is our trains, and tubes, and 'buses, and trams which ensure a highly successful admixture of hosts and ample opportunities for transference of parasites. The more we expand our residential suburbs, keeping our workshops in a few large centres of industry, the more shall we accentuate this particular difficulty. In dealing with the acute respiratory diseases of mankind it does not look as though the reduction of effective overcrowding were likely to prove the strong suit in our hand. We are faced with another illustration of the wisdom of Robert Watt's aphorism : " We may, it seems, under permission of Divine Providence, deprive death of some of his apparently most efficient means; but deprived of these, new means are discovered, or the old improved."

In the control of epidemics among animals we are not limited by the considerations of social expediency, and more may be hoped for from a strict control over the movements of healthy and infected stock. It is probable, however, that the principles which limit the utility of such methods are as applicable to animal as to human diseases. We would express a personal doubt as to the benefit which is likely to result from the policy of slaughtering cattle which form part of a herd, among which a case of foot-and-mouth disease has been diagnosed. In a country which had been free from this infection over a long period of time, such a policy might well be adopted in an attempt to stamp out the new infection before it obtained a foothold. But, once that foothold has been obtained and recurrent outbreaks have shown that the infection has become widely generalised, it seems possible that slaughter may have effects somewhat different from those intended. We have seen that the continuous immigration of susceptibles appears to be the most important single factor in maintaining the level of epidemic prevalence of an infective disease. If we may assume that slaughter has, in fact, failed completely to stamp out infection—and the history of the past few years suggests that this is the case—then it would seem that the elimination of all those animals which have been exposed to risk, and their replacement by uninfected susceptibles from other areas, may have little to recommend it as a means of reducing the incidence of the disease. In the old days of sailing ships and press-gang, the experienced captain held strong views on the unwisdom of introducing among his crew any large number of men, however healthy, who were " not salted to the ship," for he knew from bitter experience that the mingling of samples of humanity who had for long been exposed to different risks of infection might have disastrous consequences. The principle is probably of wide application in human and animal disease.

It would seem that our best hope of controlling those infectious diseases, which refuse to yield to those means of general sanitation which are compatible with the modern organisation of our social life, lies in devising some effective means of immunisation, and so raising the average level of herd-resistance. We have already referred to the use which has been made of the Schick test in the study of diphtheria. The results which have been obtained by active immunisation based on the information obtained by the use of this test afford an excellent example of the success which attends the application of scientific methods to the prevention of disease. No better instance of the utilisation of such methods could be cited than is to be found in a recent paper [illegible] by Okell, Eagleton, and O'Brien.

We have seen reason to believe that the efficacy of such methods may vary greatly according to the period of the epidemic process at which they are applied. If the best method of immunisation at our disposal will yield only a slight increase in the average herd-resistance, it may make all the difference whether such immunisation be applied early or late in the spread of infection. We cannot envisage with equanimity the immunisation of the whole of mankind to all the infectious ills which flesh is heir to. If, as seems very probable, any outbreak of infectious disease is preceded by a redistribution of the specific parasite among the population at risk, a knowledge of such a redistribution might yield valuable indications as to the appropriate measures to be adopted. It is possible that one of the duties of the public health intelligence service of the future will be to keep a watchful eye on variations in the microbial flora of mankind, by a continuous sampling of the population. Under the auspices of the Ministry of Health we are carrying out such a sampling of the Manchester population with regard to some of the more important members of the nasopharyngeal flora, and correlating the results with the incidence of the various types of respiratory disease.

It seems probable, however, that the earliest testing, on a field scale, of any principles which may be derived from experimental results must be carried out in connexion with animal rather than with human infections, since the opportunities for control and for the collection of special data are so much greater; and I would end as I began by emphasising the need for still closer coöperation between the students of human and of animal disease, and for a broad biological outlook on the part of both.

I should wish, on behalf of Dr. Greenwood and myself, to express our thanks to those who have helped us during the course of this work; on the bacteriological side to Dr. G. S. Wilson, Mrs. Joyce Wilson, Dr. L. P. Lockhart, and Miss E. R. Lewis; on the statistical side to Miss E. M. Newbold, Miss Thomas, and Messrs. Fanning and Martin; and to Mr. W. Bale for his continuous assistance in the care of our stock of normal and infected mice.

We acknowledge our great indebtedness to the Medical Research Council for their generous support throughout the past five years. Investigations of this nature are necessarily protracted and expensive, and without the Council's support they could not have been undertaken.

*Bibliography.*—The bibliography to Lectures I., II., and III. appeared in THE LANCET of March 6th, p. 484.

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DEATH OF SALFORD CORONER.—The death occurred at his home at Altrincham, near Manchester, on March 8th, of Mr. Arthur Holmes, coroner for the borough of Salford. Mr. Holmes was in his sixty-eighth year and was a son of the manse; he was appointed coroner in 1896 on the death of Mr. Frederick Price. For many years it was the custom in the borough to hold inquests on licensed premises, and during a long murder case a missing witness was found to have been taken into custody, as he had been drinking to excess during the long wait. This untoward incident was largely responsible for a room being set apart in Pendleton town hall for sittings of the coroner's court. It was in this court that the arsenic in beer scare was first brought to light and investigated. For some time Mr. Holmes acted as clerk to the Manchester Port Sanitary Authority.

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# DIABETES MELLITUS:
## A RECOVERABLE DISEASE?

BY G. H. PERCIVAL, M.B. EDIN.,
D.P.H. EDIN. & GLASG.

*(From the Department of Therapeutics, University of Edinburgh.)*

THE following cases, selected from records of a large number of diabetics who have been treated in the Royal Infirmary, Edinburgh, are reported to illustrate the possibilities of modern treatment.

The diet scale used is that described by Prof. Murray Lyon,[1] consisting of three types graded according to the carbohydrate-fatty acid ratio—viz., the A diet having a ratio of 2 to 1 or over, the B diet having a 1 to 1 ratio, and the C, in which the ratio approaches in the lower caloric values, and reaches in the higher, the optimum ratio of 1 to 1·5. A further modification is found in the D diets, where the ratio remains 1 to 1·5, but in which the protein content is increased. The A diets are always accompanied by insulin, and are employed to abolish severe clinical ketosis; the B diets *may* be used with or without insulin to get rid of glycosuria; the C diets are used alone to estimate the patient's tolerance, and also with or without insulin to slowly advance the caloric intake. Patients may be finally kept on the higher values of C or changed over to the D scale, which affords a more suitable maintenance diet on account of its higher protein content. The various diets are selected and interchanged to suit the requirements of individual cases during varying degrees of tolerance. They are referred to under the group letter, followed by a figure indicating the number of available calories in hundreds—e.g., a B 15 diet is one yielding 1500 calories, built to give a carbohydrate ratio of 1 to 1.

Insulin is withheld, except in cases possessing such a low carbohydrate tolerance that it is impossible to abolish glycosuria, or to continue an adequate caloric intake, by dietary measures alone. When required, it is injected two hours before a meal, except in very severe cases, when the interval is reduced at first to one or one and a half hours. All patients requiring insulin are taught, and those who have had preliminary hospital supervision have in most cases experienced, the symptoms of hypoglycæmia, and their remedy. The urine is tested for sugar daily by Fehling's method by the patients themselves, and also once weekly by the sister dietitian.

### *Group A.*

CASE 1.—A male, aged 23 years, had complained of lack of energy and tiredness on rising in the morning for about two months. This was attributed to frequent coincident attacks of trigeminal neuralgia, and two carious teeth were removed and a root abscess drained. About this time he commenced to be troubled with increasing frequency of micturition accompanied by urgency, and occurring especially after meals. The lassitude and urinary symptoms continued for three weeks. His urine contained 2·5 per cent. glucose one hour after a meal (estimated by Benedict's method), and a trace of acetone was present. The fasting blood-sugar content was 210 mg. per cent., and a sample of urine taken at the same time contained 0·5 per cent. glucose. At that time his weight was 9 st. 12 lb., height 5 ft. 7 in. He was given a B 15 diet and in two days the urine was sugar-free. This diet was continued for a week, then he was given C 13, with an increase of 100 calories every third day till C 28 was reached. He was kept at this level for a week, then changed to the D scale and raised to D 30. During this period of dieting he lost 9 lb. weight *during the first fortnight*, but this was soon regained. Lassitude, neuralgia, and urinary symptoms quickly disappeared during the first month. Eight months have elapsed since he first came under observation, and he now takes an ordinary diet with some limitation of cereals, and avoids substances containing actual sugar. Glycosuria occurred on one occasion after a full ordinary meal had been taken, as the patient felt sure that he must have completely recovered. The experiment was not repeated, and there has been no reappearance of glycosuria.

Seven similar cases have been examined, and a general summary will avoid much repetition.

Four of the cases were males and three were females, the ages ranging from 24 to 10 years. They sought advice for some of the following symptoms: Tiredness, frequent and urgent micturition—worst after meals and accompanied by polyuria; neuralgic pains; thirst, and in some cases hunger; itching of the skin; and in one case, which has previously been fully reported,[1] xanthomata of wide distribution were present. The duration of these symptoms varied from one to three months, during which time they had increased in severity. On examination glucose was found to be present in the urine, in some instances accompanied by acetone. When treatment was begun the initial diet varied from 900 to 1500 calories on the B scale, and the urine was rendered sugar-free in from three days to a week. Thereafter the diet was raised quickly to about a 2500 caloric value on the C scale, and later slowly increased to 3000 or 3300 calories on the D scale. One female remained at C 25, the tolerance being limited to this level, and this amount was sufficient for her body requirements. The increase to the highest values was made over periods of from one to six months. In two cases small amounts of sugar were again found in the urine after two and four months respectively on D 33. The diet was accordingly reduced to C 15 until the glycosuria was rectified, then a daily increase of 100 calories was allowed till the previous high level had been attained. Five of the patients, including the two slight relapses, have remained sugar-free for periods varying from seven months to four years and are now taking practically a normal diet, with limitation of bread and cereals, and omission of actual sugar. In three cases slight acetonuria was present on several occasions, but vanished when the fat intake was reduced. These patients were instructed on the necessity of regulating the distribution of fats so that they should always be taken along with an adequate amount of carbohydrate.

### *Group B.*

CASE 1.—A previously healthy school-boy, aged 16 years, had complained for one month of being easily fatigued, of rapid loss of weight, of frequent and urgent micturition, and of thirst. Latterly he felt constantly languid and drowsy. The urine was loaded with sugar and acetone. He was admitted to hospital, and during the 15 hours following admission passed 70 oz. of urine. He was markedly emaciated, was 5 ft. 11 in. in height, and weighed 8 st. 13 lb. The skin was dry and rough, the tongue dry and raw, the teeth were in good condition, and the lungs showed no evidence of tuberculosis. He was put on a B 15 diet with 30 units of insulin divided into three doses of 10 units each. On the first day of treatment his urine contained 30·24 g. sugar out of the 124 g. in the diet, but after continuing for five days the urine was sugar- and acetone-free and the thirst and polyuria had disappeared. The diet was changed to C 10 and increased daily by 100 calories till a daily intake of 165 g. carbohydrate in a 2800 caloric diet was being given. During this rapid increase there was no return of glycosuria or ketonuria, and on account of slight hypoglycæmic symptoms after the first injection of insulin on four successive mornings the drug had been reduced to a daily dose of 15 units. The patient was discharged on a C 28 diet with 15 units of insulin after 10 days in hospital. Three weeks after discharge he was able to stop insulin altogether, having gradually reduced the daily dose during this period. During the ensuing four months his urine has remained sugar- and acetone-free on a D 28, with an additional allowance of half an orange per day and a preparation of almost sugarless marmalade (1 per cent. available carbohydrate), and in spite of an attack of tonsillitis and a gastric upset of a few days' duration. He has put on 1 st. 6 lb. in weight, and the starving blood-sugar content is now 150 mg. per cent., and the blood-sugar curve of a normal character.

CASE 2.—A girl, aged 11 years, had complained of thirst, with parched mouth and lips, and polyuria, with urgent and frequent micturition for the previous three months. Her urine was examined during this period and was said to contain 5·6 per cent. glucose before a meal and 15·5 per cent. one hour after the meal. During the preceding two years she had suffered from whooping-cough, chicken-pox, and rubella. She was admitted to hospital, was found to be very emaciated, weighing 3 st. 12¾ lb., her height being 4 ft. 7 in. The skin was dry and rough, the tongue raw. The patient was put on a B diet of 1000 calories, which was the following day reduced to 700 calories. On both days the total carbohydrate in the diet was excreted in the urine together with acetone, which was much increased with the lower diet. The clinical manifestations of acetonæmia were judged to be severe enough to require an A diet, and she was given A 17 for two days along with 30 units of insulin. This caused disappearance of the ketonuria, but 10·7 g. of sugar were lost in the urine on both days. The injected insulin was sufficient to account for all the sugar metabolised, the patient evidently having no insulin of her own available. The carbohydrate intake was reduced by giving a B 12 diet and the glycosuria stopped. The diet was changed to the C series and gradually advanced, and in six weeks the patient was able to take a C 21 diet, while the insulin had been reduced to one injection of 5 units daily. At the end of this period the patient was discharged, and continued treatment; her weight was now 4 st. 13 lb., showing a gain of 1 st. Two and a half months later she was able to stop insulin, having recently had several slight attacks of hypoglycæmia, and has remained sugar-free for two months. On several occasions she has had slight ketonuria, and the fats in the diet have had to be slightly reduced below the 1–1·5 ratio, with the desired result. She now weighs 5 st. 6 lb., having gained 2 st. 6 lb. since the commencement of treatment.

CASE 3.—A man, aged 43 years, had complained of polyuria, thirst, loss of energy, and fatiguability during the ten years prior to examination, when the urine was found to contain glucose and acetone. On admission his weight was 9 st. 8¼ lb., and insulin was essentially required to restore the sugar-curve to normal limits. He was discharged, taking C 26 and 15 units of insulin daily. Three months after discharge the diet was C 27, insulin was no longer required, and his weight had steadily increased to 10 st. 11 lb. During the ensuing seven months no insulin has been required, he has remained sugar- and acetone-free in spite of several colds, and his weight is now 11 st. 4 lb., an increase of 1 st. 9 lb. since the commencement of treatment.

CASE 4.—A male, aged 61 years, had suffered from polyuria, thirst, and tiredness for the past nine years. He had to stop work on account of this four years ago. He had been under medical supervision during part of that time, and is reported to have had constant glycosuria. One year ago gangrene of the right big toe commenced and slowly spread to involve the whole foot. Patient was admitted to hospital, put on a B 15 diet along with 45 units of insulin daily for two days. This reduced the glycosuria to a trace and abolished ketonuria. Then a mid-thigh amputation was performed. The day after operation the urine was sugar-free. The diet was increased gradually, and the insulin reduced till it was stopped altogether. He has remained sugar- and acetone-free for two months on a C 24 diet, and the wound has healed satisfactorily; polyuria and thirst quickly disappeared after treatment had been commenced.

### *Group C.*

CASE 1.—Male, aged 18 years, had severe diabetes of short duration and was treated in hospital immediately he was observed. Insulin was required, and he was discharged taking C 28 with 10 units of insulin daily in one dose given in the morning. He continued under this treatment for one month, remaining sugar- and acetone-free. During the next three months insulin was successfully decreased, till it was stopped, the diet now being D 20. He was kept at this level for five months, then, coincident with the onset of acute nephritis, sugar reappeared in the urine. A daily dose of 10 units of insulin was again required, and the constitution of the diet was altered during the acute stage of the nephritis. During the three weeks after recovery from the nephritis the insulin was reduced to 8 units with a D 28 diet. From the commencement of treatment patient gained 2 st. in weight.

CASE 2.—Male, aged 32 years, treated in hospital for severe diabetes requiring insulin administration at first. Discharged after four weeks on D 28, without insulin, and weighing 8 st. 5 lb. He continued on this diet for seven months without glycosuria, then showed a trace for several days. The diet was reduced to 300 calories on the B scale and gradually increased to D 28. This got rid of the glycosuria, which remained absent for a further five months. The glycosuria then returned for no obvious reason and could not be abolished by dietary measures so as to permit a suitable maintenance diet, and during the ensuing six months his tolerance fluctuated and he required from 3 to 15 units of insulin daily on a C 24 diet. His weight is now 8 st. 9 lb., about 8 lb. below the standard for his age and height. All through the treatment he showed frequent traces of acetone during and in the absence of glycosuria.

### *Group D.*

Male, aged 38 years, had complained for some months of thirst, polyuria, failing eyesight, weakness and fatigue, and loss of weight. He was treated in hospital, required insulin, and was discharged on C 25 with 15 units daily. In four months the diet was raised to C 26, and the insulin reduced to nil, and he continued sugar-free on this dietary for one month. He then developed a persistent slight glycosuria, and a daily injection of 5 units was given. This was sufficient to clear the glycosuria, and after six weeks the insulin was stopped, following a fairly severe hypoglycæmia. For the next two months he remained sugar-free on a C 21 diet containing 106 g. glucose, in spite of a peritonsillar abscess, for which he was treated in hospital. He next developed a severe cold, the glycosuria returned, and he again had 5 units of insulin daily. This was stopped at the end of five weeks, and for two months the patient has been free of sugar on a C 24 diet. His weight throughout treatment has remained about 10 st. 10 lb.

Fourteen cases are divided into four groups: (a) Seven patients in whom the disease was of a mild character, who were treated by dietary measures alone, and who have now regained almost a normal tolerance. (*b*) Four patients who required insulin treatment when first observed, but who regained sufficient tolerance to enable them to discontinue its use, while continuing to take a generous maintenance diet. (*c*) Two patients, who, although like those in group B were able after a time to discontinue insulin, again required it, owing to a further decrease in pancreatic function. (*d*) One patient who twice needed insulin for short periods after having first ceased to require it, and following each "course" was able to take a sufficient diet.

### *Principles of Treatment.*

The severity of the symptoms, the presence of ketonuria, and the effect of large doses of insulin indicate that the common condition in all these cases was one of decreased activity of the insular tissue of the pancreas. The principle underlying treatment has been to permit physiological rest to this organ in accordance with Allen's findings in animal experiments. Wherever possible this has been attained by diet alone, insulin being added only where the diet was insufficient or where ketosis was present or threatened. When the condition has been improved for a time and then glycosuria returns (indicating over-taxation of the powers of assimilation) the pancreatic function is again immediately rested as completely as possible, and later the diet is very gradually increased.

### *Results.*

The beneficial effect of this line of treatment is forcibly illustrated by those cases in which large doses of insulin have been diminished and ultimately stopped, while the patient has continued to take a generous diet, the constitution of which presents no extreme variation from the normal.

It is reasonable to assume in cases showing genuine return of tolerance and an increasing capacity for naturally metabolising sugar that there is some return of functional efficiency of the pancreas, possibly a regeneration of islet tissue, and an increased natural production of insulin. The occasional reappearance of glycosuria may be explained as being due either to mild intercurrent infections, such as coryza, which are usually coincident and often precede, or to functional over-strain entailed by a too generous diet. It is worthy of note that when insulin was once more necessary in the treatment of these relapses the dose required was small. Further, the dose did not need to be progressively increased, but could be reduced, and in some cases finally discontinued. In some of the cases treated by diet alone a sugar tolerance approaching almost to normal has been reached, and the damage to the pancreas has been apparently either recovered from or compensated for. On the other hand, in those who required insulin, the tolerance regained is not nearly so great, but, especially in the younger cases in group B, a still further improvement is perhaps possible, and at least the present degree of recovery should, with reasonable care, be easily maintained. The patients have never been subjected to a special glucose tolerance test after the commencement of treatment. The information as regards improvement to be gained from such investigation is not thought of sufficient value to justify the accompanying strain on the carbohydrate mechanism, and the diet which can be tolerated with absence of glycosuria is a more natural, if less direct, indication of the patient's capabilities. The object in reporting these cases is that they seem to emphasise, firstly, the controllable character of the disease in the majority of cases treated on physiological lines with the whole-hearted coöperation of the patient, and secondly, that a surprisingly adequate carbohydrate tolerance may be recovered.

I am indebted to Prof. Murray Lyon for permission to observe his cases and for suggestions as to the selection of those recorded.

*References.*—1. Pybus and Lyon: Brit. Med. Jour., August 23rd, 1921; Lyon: Edin. Med. Jour., November, 1923. 2. Lyon: Edin. Med. Jour., April, 1922.

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# CHANGES IN VENTRICULAR RATE ASSOCIATED WITH STOKES-ADAMS ATTACKS IN COMPLETE HEART-BLOCK.

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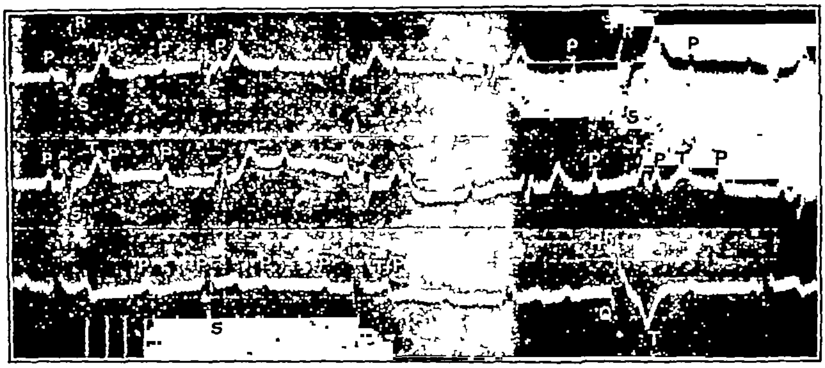
IT is well known that if the bundle of His be destroyed by a lesion, thereby cutting off impulses from the auricles to the ventricles, the ventricular action becomes slow and regular, and entirely different from that of the auricles. The ventricular contractions are then initiated from a rhythmic centre which lies in the bundle somewhere between the A.-V. node and the division of the bundle into its two branches. This idio-ventricular rhythm is usually between 30 and 40 beats a minute, but many variations are recorded. It may be as slow as 15 or as frequent as 60 per minute, and the regularity may be interrupted by premature ventricular contractions. Apart from these it is occasionally irregular, and sometimes it stops temporarily, giving rise to the Stokes-Adams syndrome, which is characterised by loss of consciousness and sometimes fits. The fits result from the longer ventricular pauses—that is, over 20 seconds—and are due to cerebral anæmia. The idio-ventricular rhythm is not under the control of the vagus, yet in some cases increase in rate is caused by emotion, exercise, and the injection of adrenalin. This suggests that it may be influenced to some extent by the sympathetic nervous system. It is my intention to review the literature on the subject, to give an account of a case showing Stokes-Adams attacks, and afterwards to discuss their causation.

In attempting to elucidate the cause of the ventricular arrest in these attacks the rate of beat before the attack and immediately afterwards is most important, but it is only in a few cases that this has been recorded, and there are few, if any, electrocardiograms which would be of the greatest assistance, inasmuch as they would reveal the type of the ventricular contractions. Quickening of the ventricular rate immediately before the attacks has been reported by Hay and Moore,[1] Ashton, Norris, and Lavenson,[2] Mackenzie,[3] and Cohn and Lewis[4]; in the last two the tachycardia has been attributed to runs of premature ventricular contractions. Slowing of the ventricular rate before the attacks has been described by Wardrop Griffith,[5] Barr,[6] Norfleet,[7] Phear and Parkinson,[8] and Cowan and Ritchie.[9] Attacks without previous alteration of rate are reported by Phear and Parkinson,[8] Barr,[6] and Erlanger.[10] The ventricular rate after the attacks also seems to vary; Wardrop Griffith[11] has described a rate of 100 per minute with premature ventricular contractions, Hume[12] describes a rate as fast and feeble, and Pepper and Austin[13] as rapid and running, dropping to 20 in two minutes. Byrom Bramwell[14] mentions two cases in which the rate after the attacks was 120 and 130 per minute, but suggests that the auricular rate had been counted instead of the ventricular. Scott,[15] Stengel,[16] Hay and Moore[1] and Jellinek and Cooper[17] record quickening at first but slowing down in a few minutes. Starling,[18] Barr,[6] Norfleet,[7] Jellinek and Cooper,[17] and Cohn and Lewis[4] record a slow rhythm after the attacks which gradually accelerates to the normal idio-ventricular rate. Wiltshire[19] reports a remarkable case in which 10 attacks are analysed; the rates of ventricular contraction before the attacks vary from 19 to 67 per minute, excluding the three final attacks, and he remarks that the length of the ventricular standstill showed some relation to the previous rate of the ventricles. When the ventricular rate had been slow the subsequent attack was likely to be short, but when the ventricle had been rapid the subsequent attack was likely to be long.

### *Clinical History.*

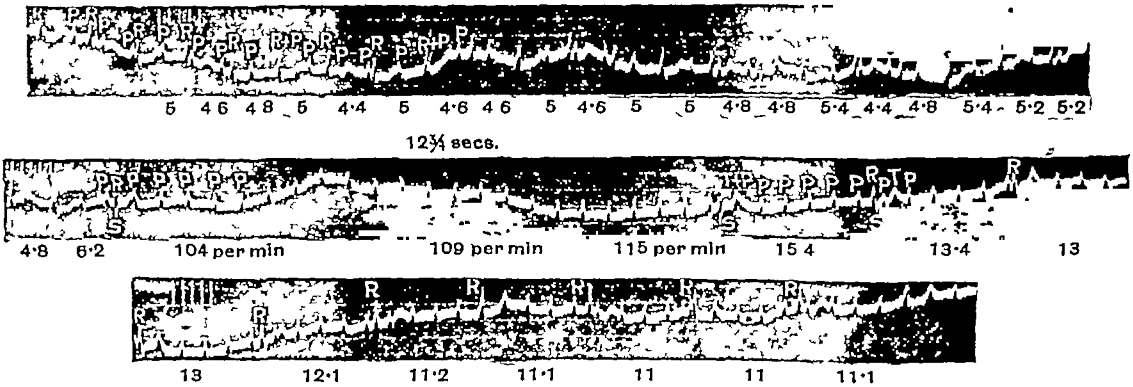
A man, aged 63, was sent to the out-patient department of the Bristol Royal Infirmary on April 9th, 1925, complaining of shortness of breath and weakness He had had a few attacks of what he called giddiness, and had fallen in some of these attacks. The heart was considerably enlarged and there was a systolic murmur at the apex. The blood pressure was 210 mm. Hg and the arteries were much sclerosed. The pulse was regular at 35 per minute. There was no history of syphilis, and the Wassermann reaction was negative. The electrocardiogram showed complete heart-block, the auricular rate being 100 and the ventricular 36 per minute. There was left ventricular preponderance with normal ventricular complexes, proving that the site of origin of the ventricular contractions was somewhere between the A.-V. node and the division of the bundle of His. There were a few premature ventricular contractions, of which the complexes were almost the opposite of the predominating complexes (Fig 1). On April 21st he developed frequent attacks of temporary loss of consciousness and was seen by Dr. Carey Coombs, who very kindly sent him to me at the Royal Infirmary. At the time of his admission he was having Stokes-Adams attacks at the rate of one every ten minutes or so. Clinically the attacks were all exactly similar in character; the pulse would suddenly quicken from 30 to about 60 per minute; this would continue for about 40 seconds and then the ventricles would stop and remain quiescent for from 12 to 15 seconds During this period he became slightly cyanosed and finally unconscious, with rather spluttering respirations. There was no convulsion. The radial pulse then returned, and he flushed and gradually resumed his normal florid colour. The pulse started slowly, and gradually quickened to about 35 per minute, at which rate it continued till the next period of tachycardia. He had no distress, nor was he frightened by the attacks, which he described as just falling asleep.

FIG. 1.



April 6th, 1925. Shows complete heart block. Auricular rate, 100; ventricular rate, 38 7 per min. Premature contractions in lead I., II., and III. marked +

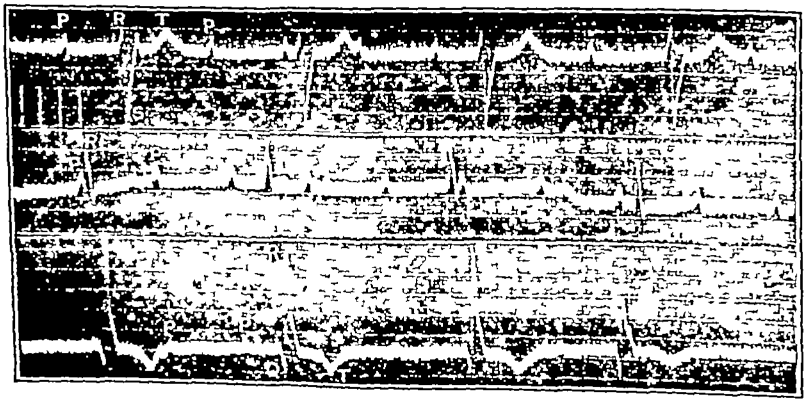
FIG. 2.



April 22nd, 1925. A continuous tracing of lead II. The intersystolic intervals are marked in fifths of a second. The time ordinates hardly show, but a few are etched in white.

These attacks were observed for about half an hour, and then he was removed to the electrocardiographic department, during which journey he had two more attacks. A tracing of two complete attacks was obtained and then, while still connected to the machine, he was given an intramuscular injection of 5 minims of adrenalin solution (1 in 1000)—the method of treatment described by Phear and Parkinson. At the time of injection the ventricular rate had quickened prior to another attack, and in due course this appeared. He had one slight attack after returning to the ward, and then no more till 7 the next morning, when he is said to have had two slight ones; a further injection of 5 minims was given, and he has had no more attacks up to the present time. Fig 2 shows a complete attack, lead II. being used. The tracing is a continuous one which has been divided into three portions.

FIG. 3.



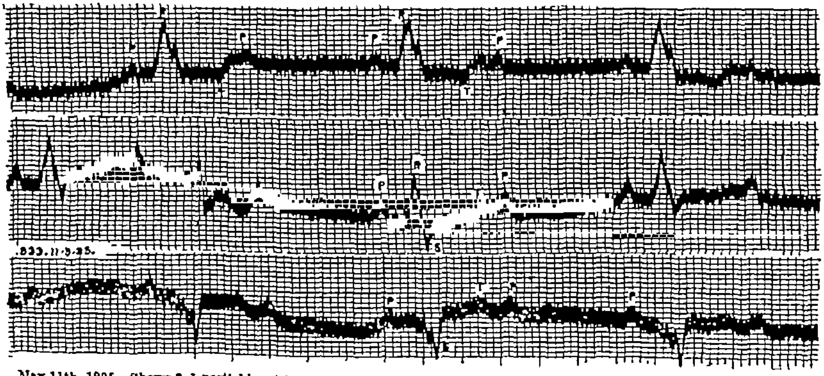
April 27th, 1925. Auricular rate, 85; ventricular rate, 35 per min A slow rhythm with the same complexes as the premature beats in Fig 1

### *The Electrocardiograms.*

The chief features are these: First, there is a rapid rhythm which varies from 62 to 63 per minute in rate. The rhythm is not perfectly regular, beats varying from 4·6 to 5·4 fifths of a second, but, allowing for distortion of some of the ventricular complexes from a superimposed P-wave, they are all of the same type, and similar to the complex of the premature beat seen in lead II. of Fig. 1, but the last ventricular complex before the ventricular stop is different; it is late, being 6·2 fifths of a second after the previous beat, and the complex is the same as the normal one in Fig. 1; there is a small R; a deep S and T is more pronounced. During the whole period of tachycardia the dissociation of auricular and ventricular rhythms continues, so that the block is still complete. The ventricles then stop beating but the auricles continue to beat regularly, though the rate has quickened to 104 per minute. During the ventricular standstill it quickens still further to 115 per minute. In the tracing obtained of each attack there is a lifting of the tracing at the eighth auricular wave following the ventricular standstill, representing probably the point at which consciousness was lost. The ventricles started again after a pause of 12½ seconds, beginning slowly and gradually quickening. It can be seen in the tracing that the first ventricular complex is of the same type as the last before the attack, the next four are more like those of the quick period except that they are wider, the Q.R.S. interval being 0·10 seconds, and in addition the R and S are thickened. After these four beats the remainder are identical with those of the tachycardia, and this rhythm continues for some time. The tracing obtained of the next attack was identical to this one with two exceptions: (1) The last beat of the ventricles before the stop did not differ from the previous ones, nor was there a longer inter-systolic period before it; (2) the ventricular stop was a little longer, lasting for 15 seconds, but there was no convulsion. After both attacks, when the rhythm had settled down, the ventricular complexes were of the original type of Fig. 1, though the change was not caught in the tracing. After adrenalin the original type of complex remained for as long as the tracing continued, which was for 20 minutes.

The next tracing was taken on April 27th (Fig. 3), and a regular slow rhythm was found, the rate being between 34 and 35 per minute. The ventricular complexes were found to be all of the type of those of the premature beats in Fig. 1. This rhythm continued, as seen in tracings not published, till May 4th. On May 11th an increase of rate to 18·2 was observed, and a tracing (Fig. 4) showed that the complete block had given way to 2–1 partial heart-block. This continued till May 14th, when he left the hospital to become an out-patient. He was next seen on June 22nd, when complete heart-block had returned (Fig. 5), the rhythm consisting of coupled beats with varying ventricular complexes, and the same rhythm was seen on his last examination on July 7th. It is noteworthy that complexes of the original type have not been seen since April 22nd.

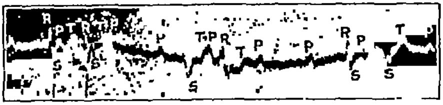
FIG. 4.



May 11th, 1925. Shows 2–1 partial heart-block. The ventricular complexes are very wide, suggesting deficient conduction down the right branch of the bundle. The ventricles are beating at the dictation of the auricles.

The only other electrocardiogram of an attack that I can find in the literature is that published by Gager and Pardee,[10] who show a tracing where, in complete heart-block, the ventricular rate quickened to 60 per minute immediately before a ventricular standstill. The ventricular complexes were at first of an abnormal type, being wider than normal, but during the tachycardia they gradually changed, becoming narrower and of the same type seen in other tracings of the case. They suggest that there was a shifting of the ventricular pacemaker from an abnormal situation to the normal during the tachycardia. Before stopping the last two ventricular beats become spaced out to 1·11 and 1·16 seconds. There is no explanation as to why the ventricular rhythm suddenly stopped. Unfortunately, the ventricular standstill was long enough to produce a convulsion, and therefore the resumption of the ventricular contractions could not be shown.

FIG. 5.



June 22nd, 1925. A short strip of lead II. showing a change in dominant rhythm and coupled beats, the second of each group being a ventricular premature contraction. The dominant ventricular rhythm shows another variation in ventricular complex.

### *Discussion.*

Much inquiry has taken place in the past as to the cause of the peculiar attacks of unconsciousness which may be found in cases of extreme bradycardia, and it is only about 25 years ago that it was recognised that they were connected with lesions in the bundle of His. Even now little is known as to the reason why the ventricle should stop so suddenly and then resume its activity. Erlanger[11] has shown experimentally that asystole of the ventricles may be expected in complete heart-block if there be a sudden cessation of a rapid stimulation of the ventricles. Hay,[12] in discussing this subject, expresses the opinion that in complete heart-block there is one point which produces the stimuli for ventricular contraction, and that any factor which could disturb this rhythm would cause ventricular standstill until such time as some other part of the muscle develops an inherent rhythm, or until the original point recovers its rhythmicity. Willius[13] points out that attacks of this kind may be expected more often in cases where the ventricular rate is in the twenties than when in the thirties, and in the thirties than in the forties. In electrocardiograms one can estimate the position of the point which produces the stimulus for ventricular contraction to some extent by the shape of the ventricular complex, and any changes which occur in the position of this point are demonstrated by a variation in the ventricular complex. We also know that it takes time for a new site for stimulus production to be developed in the bundle.

Returning to the case described, the following are the facts. An electrocardiogram of complete heart-block is shown, in which the ventricular complexes prove that the stimulus-production lies in the A.-V. bundle, for the complexes are of the normal supraventricular type. This rhythm is disturbed at times by premature ventricular contractions, the complexes of which are of the type of those arising from some portion of the right branch of the A.-V. bundle. Later we see that ventricular contractions showing this complex form a slow and regular rhythm. Between the dates of these two rhythms there occur attacks of tachycardia leading to periods of ventricular asystole, and *the ventricular complexes of this quick rhythm are in lead II. identical with those of the premature contractions* (Fig. 1) *and of those of the second rhythm* (Fig. 3). The complete heart-block gives way later to a 2–1 partial heart-block, and the ventricular complexes of this rhythm show that there is deficient conduction in the right branch of the A.-V. bundle (Fig. 4).

The deductions which may be drawn from these facts are as follows. In this case of complete heart-block with a normal supraventricular rhythm an irritable focus develops in the right branch of the A.-V. bundle; in the early stages this produces occasional premature ventricular contractions, a little later this irritability increases and the focus produces a simple ventricular tachycardia which displaces the original rhythm. This tachycardia exhausts the rhythmicity of this newly formed pacemaker and ventricular asystole occurs. After a rest the old site of stimulus production tries to resume activity (see the first contraction after the asystole in Fig. 2), but is again disturbed by the new rhythm, which slowly begins a rhythm of its own. After some time the old rhythm does manage to resume its activity, but it is soon overwhelmed by another attack of tachycardia from the new site of stimulus-production, and so on. An injection of adrenalin is given, and this so stimulates the cells of the bundle that the old rhythm is once more made powerful enough to take control. In a few days this rhythm disappears and the new site of stimulus-production permanently establishes its claim to be the ventricular pacemaker. No ventricular standstill occurs when this change is made, because the new rhythm is now capable of starting as promptly as necessary. There is nothing new in this explanation, but there is proof in the electrocardiographic tracings, and when more of these cases have been analysed by this means an explanation of all the varying attacks of ventricular asystole may be found.

### *Summary.*

A continuous electrocardiogram of the whole of a Stokes-Adams attack is reproduced. It suggests an explanation of the attacks of ventricular asystole in this case which is put forward in the text. The attacks of asystole in a case of complete heart-block were abolished by an injection of adrenalin, confirming the results obtained by Phear and Parkinson.

### *References.*

1. Hay and Moore: THE LANCET, 1906, ii., 1271.
2. Ashton, Norris, and Lavenson: Amer. Jour. Med. Sci., 1907, cxxxiii., 28.
3. Mackenzie: Dis. of Heart, Appendix 452, Case 80.
4. Cohn and Lewis: Heart, 1912, iv., 16.
5. Wardrop Griffith: Brit. Med. Jour., 1921, i., 767.
6. Barr: Ibid., 1906, ii., 1123.
7. Norfleet: Med. Record, 1903, p. 814.
8. Phear and Parkinson: THE LANCET, 1922, i., 933
9. Cowan and Ritchie: Dis. of Heart, third ed., p. 129.
10. Erlanger: Jour. Exp. Med., 1905, vii., 710.
11. Wardrop Griffith: Heart, 1915, vi., 37.
12. Hume: Ibid., 1914, v., 119.
13. Pepper and Austin: Amer. Jour. Med. Sci., 1912, cxliii., 716.
14. Byrom Bramwell: Edin. Med. Jour., 1915, xiv., 168.
15. Scott: R.A.M.C. Jour., 1921, xxxvi., 377.

(*Continued at foot of next column.*)

# Clinical and Laboratory Notes.

## DOUBLE INGUINAL HERNIA IN INFANCY: A NEW INCISION.

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IT often happens in operating on infants with a double inguinal hernia that the question arises as to the advisability of prolonging the operation by doing both sides at once. The general condition of the child, or difficulty with the administration of the anæsthetic, or both, may give rise to anxiety, and anything which will materially diminish the time taken by the operation will enable one, in certain cases, to avoid the necessity for a second surgical intervention. In dealing with the second side the time-consuming actions are (1) the changing over of the theatre staff and equipment to the other side of the table, (2) the rearrangement of towels and fresh preparation of skin, (3) the making and the closing of a second skin incision. These may all be avoided if the incision herein described is employed.

By means of a one and a half inch transverse incision along the line of the crest of the pubis efficient access may be obtained to either external abdominal ring. The incision is deepened till the surface of the aponeurosis is reached. A small double hook retractor is placed in the angle of the wound, and with quite moderate traction the region of the abdominal ring is exposed. An oblique incision through soft parts parallel to Poupart's ligament discloses the cord and its coverings. The operation can then be completed in the ordinary way.

After dealing with one side the operator exposes and treats the other in exactly the same way. By this manœuvre the time of the operation can be very materially reduced. In cases where it is desired merely to explore the opposite side this incision is particularly useful, and if no hernia be found the additional time taken is never more than one or two minutes. Such a necessity may easily arise in infants in whom the presence of a hernia on the opposite side is easily overlooked.

R. W. Murray, in his book,[1] goes so far as to say that 41 per cent. of young children with left inguinal hernia ultimately prove to have a right inguinal hernia as well. These figures would suggest that all cases of left inguinal hernia should be operated on by this method, so that the right side could be easily, rapidly, and adequately explored at the same time.

In conclusion, one last advantage may be mentioned. The transverse suprapubic incision does not, as a rule, involve the use of any artery forceps, as neither superficial epigastric, nor superficial external pubic arteries need be divided. By this means further time-saving is effected. Needless to say this method would not be adopted were any complication present such as irreducibility of the hernia or mal-descent of the testis.

## AN UNUSUAL CAUSE OF PNEUMOTHORAX.

BY BRANFORD MORGAN, M.D., M.R.C.P. Lond. & Edin.

ALTHOUGH instances of pneumothorax as a result of perforation of the œsophagus from malignant disease or chemical irritants are numerous, a search through the literature leads to the conclusion that

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[1] Hernia: Its Cause and Treatment. Second edition, p. 102. J. and A. Churchill.

(*Continued from preceding column.*)

16. Stengel: Amer. Jour. Med. Sci., 1905, cxxx., 1083.
17. Jellinek and Cooper: Brit. Med. Jour., 1908, i., 797.
18. Starling: Heart, 1921, viii., 31.
19. Wiltshire: Ibid., 1923, x., 201.
20. Gager and Pardee: Amer. Jour. Med. Sci., 1925, clxix., 656.
21. Erlanger: Quoted by Hay.[22]
22. Hay: Med. Chronicle, 1906, xliv., 371.
23. Willius: Annals Clin. Med., 1924, iii., 129.

the accident to be described is worthy of being recorded.

W. G. M., a healthy man of 20 years, whilst dining on the evening of Nov. 25th, 1921, suddenly complained of a sharp pain across the chest, at the same time saying that he thought he must have swallowed something sharp. It was then recollected that the previous evening a glass sugar basin had been cracked. He was immediately given morphia by a doctor with whom he shared rooms, and was brought into a nursing home, where, at 9.30 P.M., an œsophagoscopic examination was made by Mr. N. S. Carruthers. No foreign body could be detected, but at the lower end of the pharynx an abrasion of the posterior wall was observed. The patient passed a restless night, with increasing dyspnœa, and when seen at 7.30 the next morning was sitting up in bed, very restless, extremely dyspnœic, and of livid countenance. There were the signs of a right-sided pneumothorax, with the apex beat of the heart in the fifth left interspace 1 inch outside the nipple line. Morphia was ordered hypodermically and oxygen administered through a nasal catheter.

Following these measures the restlessness became less and the respiratory rate diminished, but the cyanosis did not improve. His condition remained much the same until 6 P.M., when, as the dyspnœa and cyanosis were increasing, a needle was inserted in the fifth right intercostal space in the anterior axillary line. Much air escaped under pressure, and the apex came back within the nipple line. There had by now developed subcutaneous emphysema over and above the left clavicle and also above the right clavicle. Over the left lung air entry was somewhat diminished and coarse rattling râles were general. His condition gradually became worse and death took place at 3.30 A.M. on the 27th.

*Post-mortem Examination.*—The right pleural cavity contained about two pints of brownish fluid of neutral reaction, which was probably largely fluid taken by mouth subsequent to the accident. The right lung was collapsed. The left lung was congested and œdematous, some parts containing air. In the right posterior wall of the œsophagus at the level of the bifurcation of the trachea was a slit-like opening three-eighths of an inch in length, and placed vertically. The lower end of the opening gaped a little; the edge was clean-cut throughout. The fragment of glass could not be found and possibly passed on along the alimentary tract after damaging the œsophagus.

I am much indebted to Dr. F. W. Burton-Fanning and Dr. H. J. Starling for their advice on the case, and to Dr. D. S. Brough for performing the post-mortem.

Norwich.

# Medical Societies.

## MEDICAL SOCIETY OF LONDON.

### LEAD IN MALIGNANT DISEASE.

AT a meeting of this Society held on March 22nd, with Sir HOLBURT WARING, the President, in the chair, Prof. W. BLAIR BELL (Liverpool) read a paper on the Use of Lead in the Treatment of Malignant Disease, illustrated by photo-micrographs.

At the outset the speaker declared that it was not his intention to do more than briefly outline his general work on the subject in supplement of his contributions to THE LANCET and other journals, his chief purpose being to invite opinions and frank criticisms. The conversion of a working hypothesis into a substantial generalisation was, in his view, vastly more important than initial attempts at treatment; if that could be accomplished, some control of the disease, limited perhaps, must inevitably follow. He spoke of the very great amount of work which had been done on the subject by his colleagues in Liverpool. Chemical and physical factors were concerned in producing the chronic condition of the cell found in malignant disease, and perhaps the fibrosis in its neighbourhood. This condition might be described as some metabolic starvation, possibly an oxygen deficiency. Under these circumstances the cell must either recover or die. A third alternative, however, was that it might revert, in its efforts to live, to the ancestral type of trophoblast. When this latter process took place the cell eroded the maternal tissues. In cancer, the more malignant it was the more de-differentiated the cells were. Grown in vitro tissues removed from the body showed rapid de-differentiation. He proceeded to show that there was a great similarity between the cancer cell and the cells of the chorionic epithelium, based on the chemical constitutional factors, the chemico-physical state of the cell membrane, the physiological processes occurring in the different cells, and the similarity of the toxicological reaction to lead.

Prof. Blair Bell then showed the following table:

| | Water. per cent. | Phosphatides. | Phosphatide-cholesterol relation. |
|---|---|---|---|
| Normal tissue | 75·0 | 3·1 | 2·5 |
| Innocent neoplasm | 80·0 | 1·5 | 2·0 |
| Malignant " | 81·5 | 4·1 | 3·2 |
| Chorionic villi | 88·9 | 6·3 | 4·7 |

On the physiological side he referred to the brilliant work of Prof. Warburg, of Berlin, on the glycolytic power of various tissues, in which he showed that whereas the ordinary resting type of cell obtained its energy by oxidation processes, the cancer cell obtained its energy by the glycolytic process. This work had been shown to be sound by researches in the Rockefeller Institute, New York.

With regard to the toxicological side, the toxicological aptitudes of a cell depended largely on its chemical constitution and its physico-chemical state. It was found in 1907 that lead, given as an abortifacient, did not produce hæmorrhage of the uterus if given in proper quantities. Half a lethal dose of lead given to the mother would produce necrosis in the chorionic epithelium without causing in her any symptom. For a weight of 2000 g. 11 c.cm. (containing 0·1 per cent. of lead) of the colloidal preparation caused no symptoms. The effect of the lead was to cause a coagulation-necrosis. For the purposes of treatment it was found better to give massive doses, but dosage could never be generalised, as the tolerance and susceptibility of various patients varied so enormously. It was a striking fact that though there might be an occasional case of cancer among workers in lead, it was of the utmost rarity, and Hoffman, in America, reported that out of 25,000 certificated cases of lead poisoning there was not a single case of cancer. It was of no avail, in answering Prof. Blair Bell's assertion on this matter, to take figures from among workers in the potteries, 80 per cent. of whom never went near lead.

Speaking generally, said Prof. Blair Bell, a large body of the lay public were naturally searching and hoping for what they spoke of as a "cure for cancer," but there could never be a cure which would be applicable to every case, especially as so many cases died within a very few days of presenting themselves for treatment. Early recognition was acknowledged on all sides as most important, and allowance must be made for the fact that in very many cases radium, X rays, and other measures had already been tried. He and his co-workers fully appreciated that lead was a dangerous drug with which to work, and that was why there had been a very careful advance, and a refraining from publishing dosages, which might not be applied with due regard to all the conditions in a case. Their object had been to set up a real, sound, dependable generalisation, so that other researchers might start from that platform and test other substances in the treatment of the disease, for he did not claim that the lead treatment was perfect.

Dr. L. CUNNINGHAM (Liverpool) said that during the last two years he had been associated with Prof. Blair Bell in the work on this subject, and during that time they had had a unique opportunity of studying the effects of lead poisoning, which had a bearing on the lead treatment of cancer, and also of the effects of industrial lead poisoning. Renal and hepatic efficiency tests were carried out, and the effects of various doses were carefully measured and estimated. The age of the patient was important; younger patients did not tolerate lead well, and males bore it better than females. If there was no cachexia, where the growth was a large one, it was usual for the patient to tolerate lead well. Chemists had shown that there was a larger quantity of lead in a malignant tumour than in normal tissue of an individual who had been treated with lead. Also, after 0·15 g. of lead had been given, a relatively large amount of lead was excreted in the urine, but not more than a trace could be found in the fæces. The blood changes following the giving of lead were very definite, including a stippling of the red cells, a polycrasia, poikilocytosis; and the anæmia was marked by a diminution of the hæmoglobin rather than by a diminution of red cells. In some of the patients the anæmia was so pronounced that transfusion had to be resorted to. In only 4 of 200 cases under treatment was the blue line on the gums found. From June, 1924, the small doses of lead used were replaced by large doses, as with the former there had been cumulative effects, sometimes of a serious character, whereas with the larger doses, 0·15 g., the symptoms were produced rapidly and were quickly recovered from, leaving apparently no permanent damage. He concluded by describing a number of cases, with the aid of photographs.

Dr. J. G. ADAMI said he felt assured that Prof. Blair Bell's work in the last five years had been not merely empirical, but had a very definite scientific basis. He deprecated the idea that in this matter of combating cancer the central idea was and should be the determination of the cause; the great aim was arrest and cure. He was the greater benefactor to humanity who kept before him that higher goal, and was not satisfied with the thought that he was pursuing science for its own sake. Advances were not for the sake of knowledge, but for the service of mankind. He showed that this was the guiding principle actuating Pasteur. He, the speaker, felt sure that, varied as the causes of cancer might be, there was in that disease an essential disturbance of endocrine functions. The work which Prof. Blair Bell had now set out was really that of a group in coöperation, and he favoured an extension of that, so that every stage of the investigation could be adequately checked.

### *Discussion.*

Sir LENTHAL CHEATLE said he had always found Prof. Blair Bell to be a man of the greatest integrity who was doing pioneer work in trying to discover the effects of poisons on tissue cells, but he objected to the comparison between the epithelium of the chorionic villi and malignant growth. The chorionic villi, he said, were not malignant growths, even though they might become metastatic in the lungs—a theory based upon such a parallelism seemed to him to be a fundamental mistake. He urged the careful analysis and examination of all statistics dealing with cancer. There were three great types of what Americans called outspoken carcinoma. One was that in which the patient was suffering from secondary visceral deposits; another was that in which that was not so, but enlarged glands in the axillæ could be assumed to indicate the spread of carcinoma to them; and the third was carcinoma—e.g., of the breast—in which there were no enlarged glands at all. In this third class, he was convinced, there would be a large percentage of cures, while in the first and second classes, coupled together, most of the cases must be regarded as hopeless.

Dr. C. J. BOND (Leicester) urged the necessity of continual research into the chemotherapy of cancer; for that reason he congratulated Prof. Blair Bell on his research with simpler chemical elements. It was necessary for that gentleman to show how the lead got to the cancer cells, and, if it got to them, what happened to the lead after it had been taken up by the cells. He, the speaker, had been feeding living leucocytes with various forms of lead, the leucocyte having been incubated from the blood stream. After ingesting the lead the leucocytes underwent a sharp metabolic downfall, and the question arose as to whether the lead attached itself to the lecithin element in the cell. If the cancer cell contained a higher lecithin co[illegible] than the cell of ordinary tissue, then there was presented a working hypothesis along which to advance.

Dr. A. LEITCH said that if Prof. Blair Bell's work had met with hostile criticism, if his cures had been met with incredulity—and even his methods had been subjected to very severe criticism—he had only himself to blame for it. The cardinal mistake was made when there was published in THE LANCET in 1922 an article blazoning forth cures and yet withholding from the medical profession any details as to what the treatment was carried out with. It was said then, and it had been said ever since, that the matter was still in the experimental stage, that it was on an experimental basis, and from that day to this the method had never been disclosed. There was an apologia published in the *British Medical Journal* recently, signed by J. E. Smith and Dr. Adami, saying, in reply to an accusation that the method had not been disclosed, that so long ago as February, 1924, Prof. Blair Bell had described and discussed the method of preparation of colloidal lead. This statement could only refer to an article published in THE LANCET in February, 1924, particularly in regard to heavy lead suspensions. On March 13th last Prof. Blair Bell wrote that the whole method had been described and discussed two years ago in sufficient detail for anyone to have repeated and extended the work already done. It was, therefore, a surprise to him now to hear that the method had been published. He was surprised that Dr. Adami should have allowed his name to be used in the manifesto. Dr. Leitch repeated that the details of the method had not been given. The apologia in the *British Medical Journal* stated that in order to preserve the public from the serious risks the remedy would undergo if medical practitioners had it for use, the committee had been compelled to protect the method of manufacture, as had been done in the case of insulin. A provisional specification had been applied for; but a search of the register did not disclose what the remedy was. The specification was dated Oct. 26th, 1925, and its title was "Improvements in the Manufacture of Therapeutic Products." The speaker would not enter into the laboratory side of the matter, as no laboratory man would regard this as anything but most flimsy and inconclusive. And what about the cures? In THE LANCET recently Dr. Adami vouched for the fact that he had seen 30 previously inoperable cases of cancer cured (Dr. Adami: I did not say "cured"). But there were no recurrences. Up to that time Prof. Blair Bell himself only claimed 31. Observers differed a great deal as to what happened in the cases, and the speaker quoted a number of these disparities. In one of the cases, he said, if it was the intention to illustrate it by a microphotograph, he would have selected a portion of tissue which was less suggestive of mere inflammation. He was, he said, very sceptical about the whole matter.

Mr. CECIL JOLL said he felt that Prof. Blair Bell had been far too apprehensive about the risks involved in giving the details of his methods to the profession. He might be right in regard to entrusting it at present to the general body of practitioners, but he could long ago have safely entrusted it to properly organised institutions, such as existed in London and other large towns. Then figures could have been based not on 227 cases, but, in the case of so widespread a disease, 20,000 cases, and they would have been of real value. The London Cancer Hospital alone last year treated over 2000 new cases of cancer. He urged Prof. Blair Bell now, for the sake of humanity, to give every possible facility to properly organised institutions to test the method fully, and issue a report in a year or two.

Sir WILLIAM WILLCOX admired the great care which had been exercised in this research by Prof. Blair Bell. The remedy chosen was one of the most powerful and dangerous poisons known; it readily combined with the tissues, and was very slowly excreted. In one case lead continued to be excreted 12 months after all contact with lead had ceased. When absorbed by the mouth the damage it caused to the tissues was, he thought, irreparable. He took it that the reason frequent small doses had been replaced by larger doses was the following. When given intravenously a certain amount, *x*, was fixed in the body, and a certain quantity, *y*, was excreted; that the ratio $x : y$ was greater with the small dose than in the case of the larger one—i.e., in the latter a larger proportion of lead was got rid of and less permanent damage accrued. He asked whether, in the cases treated by Prof. Blair Bell years ago, there had been any changes in the blood pressure or in the renal or hepatic function. Lead might prove a powerful remedy, but it was a double-edged weapon, and there was need for a prolonged investigation, so that doses might be given—as they had been and, he hoped, would be with even greater success—so that the lead would act on the cancer cells without producing harmful effects on the healthy body tissues.

Mr. DUNCAN FITZWILLIAMS acknowledged Prof. Blair Bell's honesty and his high ideals in his scientific work, but there were features which were disquieting to the speaker, and, he believed, also to the profession at large. He considered that the danger of toxicity in this matter had been exaggerated. A large number of patients had been treated by the method, and Mr. Coke told him there were no bad effects. He, Mr. Fitzwilliams, had also treated a number of cases with no ill-results. But there was no declaration by Prof. Blair Bell as to the preparation he used. So slight was the trouble which the speaker experienced in his cases that he had passed the remedy on to four practitioners. If this method was to be of real value it must be passed on to the general practitioner. He would have felt much more reassured as to the treatment if Prof. Blair Bell had brought along a chorus of young surgeons to testify to it, because the statistics of any one man were of but little value. Recently a statement had been made that 100 cases of prostatectomy had been done without a death, and no one accused such a person of lack of faith. As the blood changes, &c., were so important when giving such a substance as lead, he looked in the literature for particulars, but looked in vain, and therefore he asked Prof. Blair Bell himself for information, but received very little. He then asked to be shown the work and was told in reply that he could come if he represented a society or body. Lister, on the other hand, welcomed everyone to come and see the results of his work. Carcinoma had been the happy hunting ground of the objectionable person in the profession who always hedged his activities round with some secrecy, and he feared he must say that Prof. Blair Bell had fallen under that ban. He did not consider it had been wise of that gentleman to refuse to show interested colleagues his methods.

Mr. W. F. COKE said he had found Prof. Blair Bell's work of intense interest and congratulated him upon it and on the way in which he had set about proving his surmise to be correct. With Dr. J. B. Cook he had been using lead for two years and had recently published his earlier results.[1] But two years was a short time in which to judge of results in such a disease. A long time was occupied in arriving at the most suitable dosage. He quoted a case in which the effect of the lead on the growth had been remarkably good, though, unfortunately, that patient had recently succumbed to acute bronchitis. He thought there should be team-work on this subject at every large hospital, the effort constantly going forward to find a drug, easily tolerated, which would cure the disease without causing much upset of the body processes.

Dr. G. R. LYNCH said that Mr. Coke and he had worked with lead and had encouraging results from it, the cases having been seen by Mr. Lionel Norbury.

Mr. F. A. G. JEANS (Liverpool) said the first case of which slides were shown by the opener was under him, and in regard to it the general view was that the cancer was inoperable. He had not been associated with the team who were carrying out this research, and he was glad to know the subject was to be ventilated. As a result of what he had seen of Prof. Blair Bell's work, he wished to pay a tribute to the sincerity of it.

Mr. LIONEL NORBURY supported the remarks of Mr. Coke and confirmed the description of two cases.

The PRESIDENT conveyed the Society's thanks to Prof. Blair Bell for having come forward to discuss the subject.

### *Reply.*

Prof. BLAIR BELL, in reply, paid a tribute to the excellence of the chemical and pathological work which was done in the research by his colleagues in Liverpool. He was convinced that it was useless to look for a single cause of cancer, but the important matter was to realise the specific process of de-differentiation of cell, which had been damaged in a variety of ways. He was dresser under Sir Lenthal Cheatle, and his tendency was to pay great respect to what he said, but in the matter of the characters of the chorionic epithelium, he considered that his remarks were wrong and unjustifiable. The malignant growth of the chorion did not take place in the presence of the live fœtus, but only after the fœtus was dead. It was for that reason he searched for a biological hormone, and he went on to the use of lead. A benign growth was a hyperplasia of normal tissues; a malignant growth was a de-differentiated growth back to the chorionic type. After Dr. Bond's remarks a search would be made to see if any change was produced in the red blood-cells. Lead inhibited all growth processes, growing cells as well as other tissue. The influence of lecithin and of phosphate of lead had not been forgotten; lead replaced calcium in bones.

He found it very difficult to deal with Dr. Leitch's remarks adequately, but the colossal ignorance of some of the critics of the method was deplorable. It was untrue that he did not publish the method two years ago, but it was then assumed that everyone knew the method of making colloids; what he did was to employ the ordinary sparking method between two naked electrodes. He felt that, in dealing with such a serious subject as this, Dr. Leitch's speech was quite unpardonable in its character. He (the speaker) had worked at this matter, at his own cost, for a number of years, and when the Association of Surgeons met in Liverpool he gave a demonstration, and every laboratory was open to members of that society. He was under the impression that Mr. Fitzwilliams's name was put down to be notified when he could come, and he knew that at the time everybody was exceedingly busy. He had published a good deal of work, and the charge of secrecy ought never to have been made against him. It must not be forgotten that many of the cases sent to his colleagues and himself for the treatment were those which had been given up by surgeons. He was well aware of the potency of the drug being employed, and that was why he had not been in a hurry to disclose exact particulars before every possible test had been made. The slight discrepancies as to dates and size of tumour might occur in the narration of any series of clinical cases, and the merits of the treatment did not suffer from that kind of criticism.

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SCOTTISH HOSPITALS EXTENSIONS.—The managers of Edinburgh Royal Infirmary have agreed to purchase for £90,000 the buildings and ground occupied by George Watson's College in Archibald-place for the extension of the hospital. An "influential citizen" has aided the purchase, which had begun to look hopeless, by a donation of £10,000.—The £75,000 which is estimated to be the cost of extensions of the Glasgow Royal Hospital for Sick Children has been subscribed in less than six months by 1000 *contributors* only. When the enlargements are complete the hospital will contain 100 cots, which is said to be the largest number in any similar institution in the world.—It is proposed to provide more accommodation for the maternity department of Dundee Royal Infirmary at a cost of £30,000.—A conference in Edinburgh last week discussed the possibility of establishing a Scottish scheme for the treatment of cripples, and appointed a representative committee to formulate a plan.

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[1] Brit. Med. Jour., March 6th, 1926.

# HUNTERIAN SOCIETY.

At a dinner meeting of this Society, held at Simpson's Restaurant, Cheapside, on March 22nd, Dr. Howard Humphris, the President, being in the chair, Dr. R. A. Gibbons opened a discussion on

## Sterilisation of the Mentally Unfit.

He included in the term "unfit" anyone who through moral as well as mental deficiency failed to conform to the ordinary convenances of society. He quoted statistics showing the increase in the number of mental defectives under both statutory and voluntary supervision, and the annual cost (about £4,000,000) of maintaining the country's prisons.

*Heredity.*—His object was, he said, to suggest a method of diminishing in the future not only the mentally deficient, but the number of persons in prison, and to prove that some such means of treatment should be adopted in the interests of the State. The study of heredity, "the genetic relation between successive generations," was vitally important, for it was the main cause of both mental disorder and crime. It was also the factor which made the consideration of mental deficiency so disappointing, for, in the experience of superintendents of institutions, the degenerate, the feeble-minded, and the imbecile would remain as they were, no matter what was done for them. According to Dr. Paul Bowers, 44 per cent. of convicted prisoners were psychopathic. Environment was not to be ignored altogether, but a good environment could not make up for inherited deficiency, and this was the essential factor in criminal conduct. Authorities varied in their estimates of the percentage of prisoners with malign inheritance, but it was at least twice that of the normal population. The actual brain pathology of mental deficiency or habitual crime was, however, obscure.

*Environment.*—There was no doubt, continued Dr. Gibbons, that environment exerted a powerful influence upon the young, and some philosophers had taught that all men were born equal and became unequal later through the inequality of their opportunities. The nervous system was modified by adapting to the environment, but the organism must possess fundamental qualities that determined its adaptability. There would always be difference of opinion about whether "nature" or "nurture" were the more important. Conklin said that the modifications produced by environment were insignificant compared with hereditary disposition; Lacassagne that the microbe (the criminal) was only of importance when it found a bouillon in which it could grow, and that societies had the criminals they deserved. It was true that some mental defectives had healthy parents and owed their condition to bad conditions at or before birth, or to accident or illness afterwards, but the large majority inherited their deficiency.

*Treatment.*—Mental defectives must, he said, be treated either by segregation or by sterilisation. If segregation were thorough and included all cases nothing could be better, but it was impossible to segregate many girls and boys who were quite well enough to be kept at home. It was these highest grade defectives who were the source of danger. Apart from that there was not sufficient accommodation for many hundreds of urgent cases, who were a menace to the community as long as they remained at large. Defectives bred from six to ten times as quickly as normal people, and the Royal Commission on the Care and Control of the Feeble-minded found that to prevent them becoming parents would largely decrease the number of these persons in the population. Segregation being ineffective, the only method of diminishing their propagation was to sterilise them. The operation was simple, and in no way interfered with metabolism or sexual feeling. It would release large numbers from segregation. The limit age should be set at 16, for if there were no evidence of improvement by this time there never would be. A patient would only be sterilised after very careful deliberation by an alienist and the medical officer in charge. Sterilisation would make no difference to promiscuous intercourse, which would always go on, but it would prevent children being born with syphilis or gonorrhœal ophthalmia.

Young or middle-aged criminals with a neuropathic inheritance who had been convicted more than twice should also be sterilised, as a eugenic and not a punitive measure, though it might in time be looked on as an added punishment. This was apart from castration as a punishment for sexual offences. Dr. H. C. Sharp, of California, had seen no unfavourable symptoms, mental or physical, in 236 patients after vasectomy. Experiments had been made in 15 of the United States; in nine the law was still in force and in six it had been set aside as unconstitutional or repealed.

Sterilisation might be performed with X rays if they did not interfere with the functions of the interstitial cells. At present it was effected by vasectomy in the male and division of the Fallopian tubes in the female. Neither operation was cruel or dangerous, and this measure would lessen in time the numbers of mentally deficient, would also diminish the number of convicts, and would thereby relieve the community of their bad moral influence and the State of part of the great burden of maintaining them.

### *Voluntary Sterilisation.*

Mr. Harold Cox dealt with the political and practical, as opposed to the scientific aspect of the problem. He said that the opponents of sterilisation did not realise that the dangerous defectives were those who were not bad enough to shut up. Mental defectives were bound to pass the taint to their grandchildren, if not to their children, and it was a gross injustice that they should be allowed to have any. They were on the increase, and sterilisation would do something to reduce them, even if it did not solve the whole problem. He was surprised that Dean Inge, a man of detached and impartial mind, should advance the argument that, if they were sterilised, they would be set free to commit rape and spread disease. They could do that now. Any defective free to remain at home was free to produce a tainted child, and the opponents of sterilisation could not propose to lock all, even the highest grade feeble-minded, up for life. Some held that sterilisation was disgusting, but it was no more so than any other surgical operation. There was nothing sacred about procreation; the lowest animals were the biggest breeders. The Roman Church opposed sterilisation and birth control on these grounds, but itself held up celibate priests and virgins as the highest types of humanity. Surgical operations were undertaken to protect individuals; why not the community? He did not advocate compulsory sterilisation, but proposed that those defectives who were sufficiently sound to realise that they should not have children should be given facilities for undergoing sterilisation at the public expense, and that parents and responsible guardians of others should be able to bring their children or wards for treatment without meeting, as they did now, the opposition of the law. Parents of defective children often asked doctors to sterilise them.

### *De-Sexualisation.*

Dr. Reginald Worth said it must be understood that sterilisation meant two things: ordinary vasectomy and castration. Plato had urged castration as a punishment, and the idea still appealed to many people. Only nine of the original 15 American States had retained their sterilisation laws. The clergy had been the principal objectors, on the grounds that the measure made the man on whom it was practised an outcast, and interfered with his life, liberty, and pursuit of happiness. Those with experience of double ovariectomy said that it produced an artificial menopause with an almost incurable melancholia. He warned his hearers that if there were no mentally deficient the world would be a pretty poor place, for its real drudgery was done by people who were slightly defective. It was a fallacy that to sterilise the unfit would produce a perfect race, for defectives were often the offspring of healthy parents. The failure of the mother to produce an abortion often had a very bad subsequent effect on the child, and modern methods of birth control were causing an increase of involutional insanity among women. He thought that a great deal of discussion would still be necessary before sterilisation could be put into practice.

The **President**, as a radiologist, speaking of the interference of X rays with the interstitial cells said that although the spermatozoa were destroyed the sexual potency was increased. X rays were a third method in addition to vasectomy and castration. They might produce a melancholia, but so might the natural menopause.

### *Discussion.*

Sir **Bruce Bruce-Porter** said that he was anxious that the public should not get the impression that castration and ovariectomy were suggested methods of sterilisation. The Church's opposition could not be taken seriously by medical men as the Church had consistently opposed progress from the earliest times. Because a deficient child was born from healthy parents that did not preclude the possibility of unfitness in the grandparents. When a man was charged with murder there was often plenty of evidence of insanity in his family history, but parents would rarely admit to it. Mental deficiency accounted for a large number of people living in comfort at the State's expense, and they received a good deal more sympathy than the struggling fit man.

Mr. E. **Mortimer Woolf** complained that the discussion till then had been purely idealistic. Figures could prove anything, and heredity was an uncertain thing. Operations were not undertaken to protect but to benefit the health of individuals. Otherwise every babe would be circumcised and have its tonsils and appendix removed in its first week of life as a matter of course. He regretted the tendency of the discussion to assume that the medical profession should dictate to the public who should be sterilised and assist the law to sterilise people against their will. The profession were the advisers of the public. We did not know that a patient did not suffer as a result of having the Fallopian tubes severed. A kidney atrophied when the ureter was cut, and a testis might do the same. Many careful animal experiments were necessary before these methods were advocated for the human race. We were apt to get carried away by our ideals and create other hells that we knew not of.

Dr. B. **Dunlop**, referring to the recent leading article in The Lancet (March 13th, p. 501), denied that the advocates of sterilisation promised a rapid cure, but agreed they had not faced the point made by the article, that in order to tackle the problem of sterilisation it was necessary to tackle the whole problem of heredity.

Dr. **John Adams** said that the State would soon be forced to tackle the problem of heredity and disease. Many old and disabled people were not treated nearly so well as deficients, who were allowed to multiply freely and who inevitably produced deficient progeny. Many "healthy parents" of idiots had syphilitic parents themselves. In the animal world a balance of power kept a dangerous species from getting too strong, but we did not possess it. We should do something at once. People who were deficient in judgment and responsibility would not present themselves for sterilisation voluntarily. Venereal disease in the mentally deficient was the factor that killed off bad stock in a few generations and restored the balance of power.

Dr. W. **Langdon Brown** asked what the effect would be on the happiness of the human race of eliminating the deficient. Darwin's family tree had mental deficients in nearly every generation, and if sterilisation had prevented his birth the world would have been permanently poorer.

Dr. **Bernard Myers** quoted Dr. Tredgold as saying that even if we sterilised every mental deficient we should not wipe out deficiency, for many "healthy" people were carrying the taint. Moreover, sterilisation would give many of them a grudge against the world.

Dr. J. **Dundas** said that the large majority of military prisoners in the war were mentally deficient, and the school inspector found tame idiots in every village school, whose mothers were tame idiots.

Dr. F. L. **Provis** held that X rays produced the same effect as double ovariectomy and should never be used.

Dr. **Thomson Brown** said that Darwin might still have been born, even if sterilisation had been in force.

Mr. H. S. M. **Grover** pointed to the analogy of prohibition as an argument against force and advocated patient work at general hygiene.

Dr. C. P. **Blaiker** suggested that to follow the methods of Nature would be to kill our mentally deficients instead of segregating them.

Dr. H. A. **Ellis** deprecated our encouragement of the breeding of mental defectives and our stabilising of the fit with methods of birth control. Sterilisation, however, would only touch the fringe of the problem and was undesirable.

Dr. **Gibbons** replied.

# SOCIETY OF MEDICAL OFFICERS OF HEALTH.

## CANCER FROM VARIOUS POINTS OF VIEW.

A meeting of this Society was held on March 19th, when Dr. G. F. **Buchan**, the President, took the chair, and a number of members and visitors contributed to the discussion on this subject.

### *Cancer and the Public Health Administration.*

Dr. W. D. **Champneys** (assistant M.O.H., Willesden) said that the United States was far ahead of any other country in the campaign against cancer. The American Society for the Control of Cancer, founded in 1913, had done excellent work in collecting, collating, and disseminating information. It conducted a general education campaign with lectures, articles in the press, cinemas, wireless talks, posters, circulars, handbooks, a periodical, and private correspondence; it held special campaigns periodically, such as the National Cancer Week of 1921; and it promoted the establishment of cancer clinics to secure prompt diagnosis and treatment. Education of the medical profession was an important part of its work, for it was estimated that even in 1923 10 per cent. of the doctors consulted for cancer of the breast delayed on an average 25·9 months per case before recommending operation, and often no local examination was made at the first visit. The Pennsylvania Cancer Commission had found that the average time between the discovery of symptoms and the first call on the doctor had fallen from 18 months in 1919 to 14·6 months in 1923, and the Society believed that its propaganda was proving successful.

Describing the measures taken by the British administration, Dr. Champneys said that the Ministry of Health had set up a Departmental Committee in 1923, which had issued four memoranda as a basis for work by local authorities. It had also organised an inquiry into mammary cancer in a number of centres. The efforts of local authorities were at present confined to certain large towns, where cancer committees had been formed at the Ministry's suggestion. At Manchester, for instance, a committee undertook continuous supervision of all the cancer cases, and there was a complete system of records in hospital and private practice, with histological examination of specimens wherever possible. Leaflets urging the public to consult doctors for certain symptoms had been issued in several large towns. From 1914 onwards Dr. Mearns Fraser had published a large number in Portsmouth and had been told by surgeons that some patients came earlier in consequence. As far as Dr. Champneys was aware no public lectures on cancer had been given, though a Cardiff committee had suggested health talks to girls leaving school about the possibility of cancer in later life. Finally, an attempt had been made by the Ealing Guardians to start a cancer clinic at an infirmary, but this had come to nothing because the existing Poor-law did not cover such work.

What measures, then, should local authorities take in the future? Many ways of attacking cancer had not yet been tried in this country. First there was education, both of the medical profession and the public. There was a backward 10 per cent. of doctors in this country who needed, and would welcome, further information, which they might gain from a booklet from the Ministry of Health, from meetings of medical practitioners convened by local authorities or cancer committees, or from post-graduate lectures and demonstrations (as already suggested by the Ministry). Leaflets, posters, advertisements, articles, lectures, and cinema films issued by the Ministry were suitable means of influencing the public. There remained the need to secure accurate diagnosis, and he strongly recommended a trial of cancer clinics which should provide free diagnosis for anyone caring to attend. They should be set up either in good general hospitals or in existing municipal hospitals or clinics; the surgeon should be a man to whom local doctors would willingly bring their cases for consultation; and there should be arrangements for X ray examination and temporary admission for diagnosis. As for treatment, there should be better facilities for taking patients to treatment centres.

### *The Surgical Point of View.*

Prof. G. E. GASK (St. Bartholomew's Hospital) said that probably a good general surgeon, given proper equipment and the coöperation of a radiologist, ought to make a correct diagnosis of cancer in 90 to 95 per cent. of cases. There was no doubt that the most effective treatment of malignant growths was complete and early removal. Many other methods—e.g., radium and deep X rays—had given some remarkable results, but it was not yet clear under what conditions they could be relied on. Until further research had produced more definite information, the thing to aim at was early removal following early diagnosis. Unfortunately, the results of operation were on the whole bad; but it was difficult to be definite about them because statistics were not kept in a business-like way. Surgeons who were asked about the prognosis of this or that operation generally had to rely on their own impressions and their own cases, and it was desirable that the statistics of the various hospitals should be kept in a uniform way. Immediate results were of little value, and central authorities should ask every hospital to start follow-up schemes so that exact information about a large number of cases should become available.

### *Laboratory Work.*

Dr. W. D. NEWCOMB (assistant pathologist, St. Mary's Hospital) doubted whether 90 per cent. of cases could be diagnosed by the surgeon. It was a mistake, he said, to ask for a pathologist's opinion only in difficult cases. An apparently simple cyst from the breast might show malignant change under the microscope, and the border-line between innocent hyperplasia and cancer was none too easily defined. The pioneer work of the Imperial Cancer Research Fund under Bashford and Murray was now beginning to bear fruit. Gye and Barnard had offered a solution which explained many of the known facts about cancer, and their work should be confirmed or disputed shortly. The investigations of Lumsden suggested that a serum might possibly be produced which would cure mouse cancer, whilst Maud Slye's work on mice, which indicated that susceptibility to cancer was a Mendelian recessive characteristic, had been so far accepted that American eugenists were recommending people of cancerous heredity not to inter-marry. Of Blair Bell's lead treatment it was too soon to speak.

### *Cancer and the General Practitioner.*

Dr. F. E. ALLEN said that on going into general practice after some years of hospital appointments he had found that his ideas on the value of signs of cancer were rudely knocked on the head. In his practice cancer accounted for 14 per cent. of the deaths, but less than 1 per cent. of the visits. It was very difficult for the practitioner to spot one grave symptom amongst a plethora of others. Having been taught as a student that piles in a middle-aged man suggested carcinoma, his partner had examined the rectum of every such case for 25 years, but none had been malignant. The cancer patient often had toxæmia which gave him vague aches and pains masking the lumbago or sciatica of vital significance. And his doctor might have attended him for much the same symptoms for years.

Women were getting much more sensible about cancer of the breast; working-class women often came for an opinion. It was, he thought, always a good thing for a doctor to get a second opinion about the condition of the breast. Women were also more alive to the significance of metrorrhagia after the menopause, but this symptom did not always indicate cancer in spite of what authorities said. The general practitioner had to be very wide awake to avoid missing cancer, and there were often economic reasons why fathers and mothers of families did not dare to consult a doctor until too late. Wealthier patients, on account of a growing feeling among them against registered practitioners, tried a course of diet from an unqualified healer or went to an osteopath. In fact, the panel patient, who had to see his regional medical officer if unwell for a few weeks, was really safer than the richer patient.

Cancer clinics, Dr. Allen believed, were undesirable, for the public had enough wind up already. Little could be told about cancer, as the cause was not known and people already knew that the outlook in cancer was very bad indeed. Regular medical examination every six months would, however, be really useful. Could not the big insurance companies be induced to arrange this for policy-holders without charge? It would probably pay them to do it.

### *Discussion.*

The PRESIDENT expressed his warm interest in this proposal and invited discussion.

Dr. W. J. HOWARTH said that he was loath to recommend ad hoc institutions for dealing with cancer until knowledge was more definite. It would be easy to magnify the importance of such places and drain resources from other channels. There was more than a little truth in the idea put forward by Mr. Morley Roberts in his recent book, "Malignancy and Evolution," that there is a place in cancer research for the fireside philosopher. Perhaps good might come of study by a group of members of the Society who could meet to discuss the work being done in the various fields.

Dr. LOCKHART STEPHENS said that he had addressed over 7000 people at lectures in eight English towns on what ought to be known about cancer, and had found them very appreciative. It was ignorant fear, not knowledge of the truth, which frightened people. Leaflets did not go for much in this country, but they might influence general practitioners, who, in their turn, could work to the best advantage because people knew and trusted them. He thought that surgeons at big hospitals took an unnecessarily pessimistic view because many early cases were efficiently dealt with by local surgeons and never went to central hospitals. It should be known that cancer is curable and that the chief obstacle to its being cured is the obstinacy of the public in not coming for early diagnosis. *Lectures certainly did good.*

Dr. CHAMPNEYS, in reply, said that public panic should not be feared; it was due to lack of knowledge rather than too much. Only genuine facts should be told and not theories. Several large assurance companies in America insisted on periodic examinations of their policy-holders, such as Dr. Allen had suggested. It was one of the terms of assurance. In conclusion he pleaded again for special clinics. General hospitals were often too far away from the patients, and people were now accustomed to municipal clinics. If they could get the free opinion of an expert they would flock to see him; treatment was not an essential part of the scheme. General hospitals were already understaffed and overworked.

Dr. ALLEN said that leaflets to doctors would probably go the way of other circulars. Medical officers of health ought to be on close and pleasant terms with the practitioners in their district, when personal discussion would lead to the right facts being spread.

## JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.

### *The Pineal Body.*

ON March 9th Prof. P. T. Herring gave a lecture on the pineal body. After alluding to the numerous theories about its function put forward by anatomists and philosophers, he gave a brief account of the comparative anatomy of the organ in various types of vertebrates, from the elasmobranch fishes upwards. It is, he said, one of a series of structures associated with the roof of the third ventricle. Its construction and morphology suggest a secretory function; it has a distinct nerve-supply, and originally its cavity communicated with the cerebro-spinal canal. As development advanced it was shut off from this connexion, and apparently became an organ of internal secretion. In some of the lizards it is associated with the appearance of a mesial eye, but the structure and nerve-supply of this eye are distinct from those of the pineal gland itself. In the higher mammals, in which the gland is shut off from the cerebro-spinal canal, a mass of definite glandular epithelium, which is almost certainly secretory, is found immediately behind the pineal recess and lining the ventricular surface of the posterior commissure. The pineal body itself consists mainly of cells with characteristic club-shaped processes, and tumours of the gland are found to be either teratomata or pinealomata composed of these characteristic cells. Clinically, tumours of the gland appear to be associated with precocious sexual development. Experimental physiology has yielded contradictory results, but certain experiments based on feeding with the gland substance have produced precocious sexual development in young males; in females the results are negative. Extirpation experiments are extremely difficult on account of the vascular relations of the gland, and most animals die of hæmorrhage. Transplantation has never been successful. The posterior lobe of the pituitary body, Prof. Herring pointed out, resembles the pineal gland in its relation to the cerebro-spinal fluid system.

*Corrigendum.*—At the meeting of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine held on March 4th (THE LANCET, March 20th, p. 601) the paper on A Method of Endoscopy of the Uterus and its Indications was read by Mr. H. F. *Seymour*, of Brighton. We followed the printed diary card supplied by the Society and regret the inaccuracy.

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THE LATE DR. C. L. FRASER.—Dr. Charles Lachlan Fraser, who died recently at Berwick, was a native of Montrose, where he was born in 1859. He was educated at the Montrose Academy and at the High School, Edinburgh. He studied *medicine* at the *Royal Infirmary, Glasgow*, becoming L.R.C.P. Edin. in 1885, F.R.C.S. in 1887, M.R.C.P. in 1893, and F.R.C.P. in 1895. In 1890 he took the D.P.H. Edin. Dr. Fraser spent most of his working life in practice at Berwick-on-Tweed, being a surgeon to the Berwick Infirmary and a school medical officer. He was keenly interested in local affairs as a justice of the peace and in the Territorial movement, holding rank as Lieut.-Colonel R.A.M.C., T.F.

# Reviews and Notices of Books.

BIOCHEMISTRY.

*Practical Physiological Chemistry.* Seventh edition. By SYDNEY W. COLE, M.A., Trinity College, Cambridge; University Lecturer in Medical Chemistry, Cambridge; Hon. Director of Pathological Chemistry, Charing Cross Hospital Medical School. Cambridge: W. Heffer and Sons, Ltd. 1926. Pp. 470. 16s.

MR. S. W. Cole is recognised as being one of the most experienced teachers of practical biochemistry to medical and biological students, and his writings have benefited by his wide experience. This book, first published in 1904, has grown enormously in size, and its present seventh edition bears but little resemblance to the earlier issues. Chapter I. is devoted entirely to physical chemistry—a new feature. An elementary account of the theory of solutions, hydrogen-ion concentration, and colloids is given. Mr. Cole has thereby solved the problem of many teachers, since the practical exercises and theoretical discussions are so clear that no special book or apparatus is required. The next two chapters deal with proteins, whilst the fourth is allotted to methods for the preparation of certain amino-acids. Here the author adheres in the main to the methods described in Abderhalden's Biochemisches Handlexikon; some of the more recent methods give very much better results, and one would hope to see the techniques of Hanke and Koessler and similar methods included in a new edition. Chapter V., on carbohydrates, contains little new matter, with the exception of the method devised by the author for the estimation of blood-sugar. Additions have also been made to the chapters on fats, foods, and enzymes. The omission of an account of the work on the optimum pH of diastase mars an otherwise excellent account of this ferment. An entirely new feature is Chapter IX., on biological oxidations and reductions. It forms one of the most concise accounts of this difficult subject that we have as yet seen. There are some additions to the account of blood pigments, but the information supplied is sketchy and not very practical. The final chapters are devoted to the analysis of blood and urine.

Some omissions are noticeable For example, insulin is not mentioned throughout the book. It is now so cheap that some practical exercises with it could properly be included. Indeed, all the internal secretions are entirely ignored. The author has devised many new methods to which his name is properly attached; certain other devices described are such slight modifications of existing recognised methods that perhaps unnecessary multiplication is likely to result from a special table. These points are mentioned with the hope that they may be of use when the preparation of other editions of this most excellent work is contemplated.

*Chemical Pathology.* Being a Discussion of General Pathology from the Standpoint of the Chemical Process Involved. Fifth edition. By H. GIDEON WELLS, Ph.D., M.D., Professor of Pathology in the University of Chicago and in Rush Medical College, Chicago; Director of Medical Research in the Otho S.A. Sprague Memorial Institute. London and Philadelphia: W. B. Saunders Company. 1926. Pp. 790. 40s.

THIS book has become a classic. We have had the pleasure of watching its development from the first edition, published in 1907; in all the earlier editions the author exercised a critical faculty for which he is noted, with the result that a masterly survey of the more reliable investigations and publications was produced. As time went on the amount of literature to be digested increased by leaps and bounds, and although the volume grew, the selection of matter for insertion evidently became more and more difficult. In the present edition there is much rather doubtful work recorded, and in some instances even work which has been contradicted appears in the text in authoritative tones. This is probably the result of the very speedy growth of the subject, making it a herculean task for one man to keep abreast of all its developments and checks, and the book remains still a very fine work even if the balance is less carefully held.

The first chapters deal with the physical chemistry of the cell and enzymes. The section on oxidation processes is rather disappointing, for although the thermolabile systems are well dealt with, glutathione receives a mere mention. With regard to diastase, there is no account of the recent work on the optimum pH for this substance. The next three chapters deal with the chemistry of bacteria, animal parasites, and various poisons. These remain very much as before, whilst the next four chapters on immunity contain much new matter. We would suggest that the author takes the Abderhalden reaction too seriously in devoting two pages of close print to it, but he is able to see the doubts cast upon its value. The chapter on growth and repair has been extended, and includes a very good summary of the present-day views on vitamins. The special chapter on œdema has been greatly expanded, and is undoubtedly one of the finest in the book. On the subject of pathological pigmentations, the part played by hæmoglobin is not set out clearly. The account of the disintegration products is rather sketchy, especially as regards hæmatin.

The section on ductless glands is perhaps the least successful in the book. For instance, the author gives the impression that the isolation of thyroxin has rounded off all chemical researches on the thyroid; yet many reliable workers have pointed out that thyroxin does not constitute the total iodine of the gland. Again, the formula proposed by Kendall is by no means a generally accepted one. The author describes Robertson's work on tethelin, but does not mention the counter observations of Cannon and Drummond. Prof. Wells, speaking of the reproductive glands, says, "too little is known as to the chemical character of these secretions to warrant their discussion in this place." This may be true in relation to the testicle, but the old observations of Herrmann and Fränkel, and the newer ones of Allen and Doisy on the ovary certainly deserve inclusion in any modern text-book on chemical pathology.

On the whole, however, the book retains its place as one of the greatest expositions of chemical pathology in the literature. If we may offer a suggestion, it is that the author would be well advised not to increase the size of future editions, but to exercise as keenly as in the past that excellent critical faculty that has made his writings so valuable.

### DISEASES OF THE EYE.

A Manual for the Practitioner. By HENRY KIRKPATRICK, M.B., Lieut.-Col. I.M.S. (retired); late Professor of Ophthalmology, Medical College, Madras. Calcutta: Butterworth and Co. 1925. Pp. 132. 10s. 6d.

THIS book is written for the general practitioner, especially one practising in remote parts. The author would hardly maintain that it contains sufficient instruction for those who have to undertake the responsibility of treating difficult eye cases. At the same time a comparatively small book of this sort will be of use to men who have learnt the elements of the subject in student days and who want to maintain their knowledge in order to be able to deal with emergency cases. Colonel Kirkpatrick's experience has been acquired in India, and, as one would expect, a good deal of attention is devoted to trachoma and its sequelæ. With regard to causation of cataract the suggestion is made that its frequent occurrence in India may have some connexion with the poor diet of the population, especially a deficient supply of vitamins. In the domain of treatment the book suggests a method of inspecting the upper conjunctival fornix which, so far as we know, is original. About 1 c.cm. of normal saline is injected beneath the conjunctiva at the upper border of the tarsus. This method, which the author calls "ballooning," might certainly be of service in cases where the ordinary method of eversion is difficult. Another original method of treatment applies to cases of acute conjunctivitis where there is much œdema, and especially the gonorrhœal form and septic cases. This consists of an eye bath of 10 per cent. magnesium sulphate applied for a few minutes every few hours. The author says "the hypertonic solution is able to exert a powerful osmotic action through the inflamed membrane, and thus to reduce the chemosis and to relieve the lymphatic circulation." The suggestion has been favourably mentioned in recent editions of some of the larger text-books—De Schweinitz and Fuchs.

Altogether a useful little book.

### LECTURES ON NUTRITION.

London and Philadelphia: W. B. Saunders Company. 1925. Pp. 243. 12s.

THERE is more important scientific matter packed into this slender volume than is to be found in many closely-printed tomes. It is a series of lectures given at the Mayo Foundation and at the Universities of Wisconsin, Minnesota, Nebraska, Iowa, and Washington. The first lecture, by Dr. F. G. Benedict, deals with basal metabolism; in the second Prof. Graham Lusk discusses problems of metabolism; whilst in the third Prof. E. F. Du Bois writes on the proportions in which protein, fat, and carbohydrate are metabolised in disease. Prof. A. V. Hill, in the fourth lecture, deals with muscular activity and carbohydrate metabolism, and the two final lectures, by Prof. E. V. McCollum and Prof. H. McLean Evans, are devoted to vitamins and kindred bodies. These essays do not make easy reading; they are too advanced for any reader without knowledge of biochemistry. But it is rare to find a collection of essays in which such broad generalisations have been drawn with great erudition and skill. Particularly would we commend the lecture by Prof. Lusk, who reviews past and present chemical and physiological knowledge in a manner worthy of our scientific ancestors, and, let it be added, in a manner rare in an age devoted to hasty inquiry into minutiæ. An admirable series of references is given at the end of each lecture which further enhances the value to the student of this welcome book.

### DISEASES OF THE NOSE, THROAT AND EAR.

Fifth edition. By WILLIAM LINCOLN BALLENGER, M.D., late Professor of Otology, Rhinology, and Laryngology, University of Illinois, Chicago. Revised by HOWARD CHARLES BALLENGER, M.D., Otolaryngological Staff, Evanston Hospital, Chicago. London: Henry Kimpton. 1925. Pp. 1080. 42s.

Ballenger's work on diseases of the nose, throat and ear has long been recognised as one of the foremost text-books on the subject, and this, the fifth, edition is evidence of its continued popularity. The number of alterations and additions in the new edition are not very great. The description of the Ballenger-Sluder method of removing the tonsils has been rewritten and new illustrations inserted, and it is noteworthy that Ballenger no longer uses the alveolar eminence to push the tonsil through the guillotine, as advised by Sluder, but employs the index finger of the other hand; this is the procedure originally described by Whillis, of Newcastle, a few months before the publication of Sluder's work, but he does not mention Whillis's name (v. THE LANCET, Sept. 17th, 1910, The Enucleation of Tonsils with the Guillotine, by S. S. Whillis and F. C. Pybus): Lautenschlager's and Halle's operations for the treatment of atrophic rhinitis by advancing the antro-nasal wall are described, but the results of these methods are not given. The chapters on hay fever, hyperæsthetic rhinitis, and asthma have been rewritten, as also that on Ménière's symptom-complex. Much attention is given to operative procedures, and not quite enough to their indications and results; indeed, the criticism may be offered that too many operative methods are described, and that the student is not given sufficiently dogmatic guidance by the authors as to which of the methods is to be preferred. A good instance of this is the chapter on the surgical correction of obstructive malformations of the nasal septum. Here an immense number of methods are described, many of which, such as Asch's and the spokeshave operation, are really obsolete. Few will agree that a simple spur may be removed with a saw or spokeshave with less risk to the integrity of the septum than by submucous resection; on the contrary, most believe that a spur is nearly always but the apex of a deviation. It is not a good reason for preferring other methods to submucous resection, that "they are simpler and almost, if not quite, as satisfactory in their results." Of the surgical treatment of malignant tumours of the tonsil, the only method described is von Langenbeck's temporary resection of the lower jaw, and the possibility of removal through the mouth is not mentioned. There is no mention of the use of vocal rest in the treatment of tuberculous laryngitis. However, in spite of inequalities, difficult to avoid in a work of this size and scope, this is an admirable text-book full of valuable information.

### Plastic Surgery of the Nose.

By J. Eastman Sheehan, M.D., F.A.C.S., Plastic Surgeon and Chief of Nose and Throat Clinic, New York Post-Graduate Medical School and Hospital. New York: Paul B. Hoeber. 1925. Pp. 240. $10.

In this book Dr. Sheehan confines himself to the plastic surgery of deformities of the external nose, and deals with the treatment of such conditions as twisted and "hump" nose, depressions of the bridge, deformities of the alæ and tip, and, finally, with rhinoplasty for the correction of complete or extensive destruction of the nose. He does most of his work on the nasal bridge through an incision which splits the columella, and claims that the resulting scar is almost invisible; and he rightly emphasises the importance of providing an epithelial lining for the interior nasal cavity in all forms of rhinoplasty where the original lining has been destroyed. He acknowledges "cordially and gratefully" the influence of Mr. H. D. Gillies, whose work he had the opportunity of observing over a long period at Queen Mary's Hospital at Sidcup. In his opinion, the use of paraffin for the correction of disfigurements cannot be too strongly condemned; but it is a pity that he allows himself to say that all who use this method are either ignorant or influenced by considerations of personal gain. This kind of argument is of no value on a scientific question. As a matter of fact, we consider that the common small depression at the nasal bridge is best corrected by injection of a small quantity of paraffin wax, and that the result is quite permanent; as to "personal gain," the procedure is simple and naturally commands a much smaller fee than a plastic operation, and it leaves no scar. For resection of the deflected septum Dr. Sheehan describes incision through the columella as "a ready preliminary to separation of the septum from the tissues," but he does not say whether this is his ordinary method of performing a septal resection or, if not, for what cases he would advise it; nor does he state what advantage he finds in a severer method involving an external scar over the usual very satisfactory operation. The operative procedures are sometimes difficult to follow in the text, but the illustrations are sufficient to make them easily understood; these latter are both numerous and good, and the volume is well printed and produced.

### Elementary Hygiene for Nurses.

Third edition. By H. C. Rutherford Darling, M.D., M.S. Lond., F.R.C.S. Eng., Surgeon, Coast Hospital, Sydney, N.S.W. London: J. and A. Churchill. 1926. Pp. 201. 5s.

In its new form this book has been brought so thoroughly up to date that it reveals little of the character of an old work rewritten. It deals in eight chapters with ventilation, warmth, light; food and milk; water, sanitation, and drainage; sewage, dwellings, and temporary hospitals; infectious diseases; parasites; personal hygiene; and health nursing, the last-named section being contributed by Dr. Harvey Sutton. An appendix of 20 pages is packed with facts of practical importance. Written in the Antipodes, this book expresses essentially the English outlook on hygiene, although lack of familiarity with our public health procedure may account for unimportant inaccuracies—for instance, in connexion with the notification of infectious diseases, the grading of milk, and the law relating to preservatives in the latter article of diet. The retention of the term "ptomaine poisoning" is unfortunate, and the paragraphs devoted to food poisoning may give the impression that there is more than a casual association between decomposition and the specific infections involved. The connexion, too, between typhoid and contaminated water is overstressed, and the mnemonics on pp. 239 and 240 might well be omitted. However, the author succeeds in conveying concisely but accurately all that a nurse needs to know of preventive medicine, and the conception of the various branches of the subject, with the exceptions we have noted, is entirely modern. The illustrations are carefully chosen and well reproduced. Altogether an admirable little book which we can confidently recommend to nurses and their teachers.

### Hygiene of Sex.

By Max von Gruber, M.D. Authorised translation into English. London: Baillière, Tindall and Cox; Baltimore: Williams and Wilkins. 1926. Pp. 169. $1.50.

This is a popular exposition of the biology, physiology, and to a very limited extent the pathology of sex. The author has written very directly, and has avoided the errors of taste which such books often exhibit. His style is dogmatic and he finds no place for references to the literature or for the names of physiologists whose experiments are mentioned. This conduces to brevity and simplicity of argument, but has its disadvantages. The statement (p. 82) that injections of serum beneath the skin have been shown experimentally to increase the capacity for muscular activity both by delaying the onset of fatigue and hastening the process of recovery therefrom, is one that we should have been interested to verify in the literature. We take exception to the following statement on masturbation: "Very often by reading him (the child) some of the harrowing descriptions, such as may be found in the medical writings of the past, it is possible to sufficiently frighten him to cause him to break the habit." The inherent dishonesty as well as the exceeding danger of such a procedure calls for protest. We have, however, no serious quarrel with most of the conclusions reached or the advice given.

### Anatomy for Artists.

By E. Wolff. Illustrated by George Charlton. London: H. K. Lewis and Co., Ltd. 1925. Pp. 174. 12s. 6d.

This is a good and readable account of the skeletal and muscular structures of the body as seen from the point of view of the needs of the artist. The descriptions are not tediously long, but appear to be sufficient as well as accurate. Stress is laid on differences between the sexes in anatomical conformation, and a good short chapter on the distribution of fatty masses depending on sexual development is included. We do not remember a similar account in any English book on artistic anatomy, although the subject is evidently one of great importance in the treatment of this subject. The simultaneous action of muscles moving the scapula and the arm, in raising that limb, is mentioned, but we would like to see it more strongly impressed on the student, with a view to the verisimilitude of a reproduction of a limb in action as seen from the back. No mention is made of the action of the rhomboids—a regrettable omission, inasmuch as these muscles are so frequently given actions which they do not possess. The lessened power of extension in the female hip is another matter which might be of import in the portrayal of poses of action. The reference on p. 3 to Fig. 69 should be to Fig. 65. The book is well produced and clearly illustrated with diagrammatic drawings of the muscles and with drawings of the complete parts.

# Reports and Analytical Records.

## (1) TABLETS OF ASPIRIN COMPOUND WITH DOVER'S POWDER (MODIFIED); (2) DIGIFORTIS.

(Parke, Davis and Co., 50–54, Beak-street, London, W. 1.)

(1) This firm for some years supplied tablets according to the formula suggested by Sir G. Archdall Reid in The Lancet of June 4th, 1921, for use in cases of pyrexia and influenza, but as that formula comes within the scope of the Dangerous Drugs Act they have recently introduced tablets of aspirin compound with Dover's powder, modified (C.T. 579), containing rather less Dover's powder, so as to be outside the scope of the Act, and rather more aspirin. Each of the modified tablets contains: aspirin, 6 gr.; phenacetin, 2½ gr.; Dover's powder, 2 gr. The dose is one to two tablets, and the preparation is supplied in bottles of 100, 500, or 1000 tablets. Sir Archdall Reid's original description of his experience with a nearly identical combination in the toxæmia of pneumonia was dramatically instructive.

(2) *Digifortis.*—This is a standardised preparation. While the gravest issues may hang upon the activity of digitalis in the particular form employed, there are few drugs that are more liable to deteriorate. Digifortis is a physiologically standardised digitalis preparation, in the production of which the manufacturers claim to have taken every possible precaution to ensure therapeutic efficiency. The leaves have been specially selected, the fatty constituents eliminated, and the activity of the finished product determined by physiological experiment. Digifortis is supplied in amber-coloured bottles of 1 oz. to protect from the action of light and the deterioration that may follow storage, and a label bears the date of manufacture: the physician will know the age of his stock, and full activity is guaranteed for at least one year from the date. The average dose of digifortis (P., D. & Co.) is 8 minims, two or three times daily, or more often if indicated.

## ISACEN.

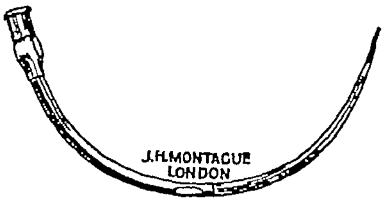
(Hoffmann-La Roche Chemical Works, Ltd., 7–8, Idol-lane, London, E.C. 3.)

This is a white powder without taste or odour and is insoluble in water or acids, so that any action it may possess should be exercised in the large intestines. The preparation has been extensively tried out in the Roche Institute of Experimental Therapy at Basle and has been found a useful purgative in cases of constipation of varying origin even in quite small doses.

# New Inventions.

## A NEEDLE FOR SALINE INJECTIONS INTO THE PERITONEAL CAVITY.

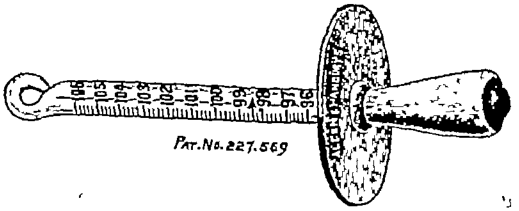
For infants the intraperitoneal injection of saline has many advantages over subcutaneous or rectal administration. More fluid can be given; it is more quickly absorbed; there is less discomfort to the child, and glucose solutions up to 10 per cent., and blood, can be used in injections. The objection is that there is some danger of perforating the intestine or of setting up peritonitis, apart from injury to the intestine. These dangers are no doubt present when one-end needles are plunged blindly through the abdominal wall or when the solutions used are not aseptic. In a series of cases at the Evelina Hospital for Sick Children we have had uniform success with a two-end needle, which is used as follows: A fold of skin and abdominal wall (1 in. across) half way between the umbilicus and symphysis pubis is gripped tightly between the thumb and forefinger and the absence of peritoneal contents appreciated. During the period of relaxation which occurs with expiratory apnœa (which periods are long in these infants) a rapid transverse stab is made just below the gripping fingers until the point of the needle emerges from the opposite half of the abdomen, and the needle is adjusted, so that the aperture half way along the curve opens into the peritoneal cavity. That this adjustment is accurate can be appreciated at once by the ready flow of saline, without bulging of the abdominal wall. In these infants the abdominal wall is very lax and an easily safe margin can be raised. Sometimes the injection sets up vomiting, but this can be partially avoided by injecting slowly. The needle has been made for us by J. H. Montague, 69, New Bond-street, London, W. 1.



I. W. Gallant, M.B., B.S. Lond.
R. M. Gordon, M.B., Ch.B. Glasg.
Evelina Hospital for Sick Children, Southwark.

## AN INFANTS' CLINICAL THERMOMETER.

The illustration shows a thermometer which is designed to take an infant's temperature by the mouth. The usual method of taking an infant's temperature by the axilla or by the rectum have their obvious disadvantages. This instrument consists of a special thermometer with a spherical bulb, the lower portion of which projects through a reinforced teat, the end of which is invaginated and protects the neck and upper portion of the bulb of the thermometer. The thermometer of necessity takes a little longer to register than the ordinary clinical variety, as the infant is allowed to suck the teat in the same way as a "dummy," the bulb lying between the tongue and the roof of the mouth.



Messrs. Allen and Hanburys, Limited, are the manufacturers.

G. F. Randall, M.R.C.S., L.R.C.P. Lond.
Sheffield.

THE LANCET.

*LONDON · SATURDAY, MARCH 27, 1926*

## AN ESSAY IN EXPERIMENTAL EPIDEMIOLOGY.

THE problem of epidemiology to-day is to harmonise the facts which may be found in CREIGHTON'S History of Epidemics in Britain or in Sir WILLIAM HAMER'S sheaf of reports on the health of London with those which are summarised in MUIR and RITCHIE'S Bacteriology There are, on the one hand, those to whose way of thinking an epidemic is a thing of itself with an individuality which exists in relationship to past and future epidemics of the same kind and of other kinds. On the other are those who see in an epidemic a response to a parasitic agent conditioned by circumstances of the host and of the parasite. If we believe—as in the present state of knowledge we are bound to believe—that parasites are essential causes of infectious diseases, the two points of view cannot be discrepant, nor can they in the end give discordant answers to the problems with which epidemiology has to deal In so far as the answers may have an appearance of discordance, we may be as sure as we can be of most things that the facts or their interpretation are at fault. Much has been done in recent years towards this harmonisation by the joint advance of bacteriology and mass clinical inquiry We know now, for example, that people may harbour virulent diphtheria bacilli without having diphtheria, and that they may become actively immune to diphtheria without ever having had an attack of the disease, the realisation of the carrier state has shown the line along which we may expect to find the solution of many difficulties. We know that the seasonal prevalence of plague is due to the effects of temperature and humidity upon the rat-flea, and it is into these terms that we can translate the cosmic miasmas of the past. In many other ways observations in the field have improved our knowledge, and it might have progressed faster if the numerical data of the health reports were less neglected as subjects of meditation by medical men

But there are at least as many great questions of epidemiology about which we really know little or nothing that may be expressed in bacteriological terms. What happens when an epidemic slowly emerges, gathers increasing momentum during its climax, culminates, and then falls down to die away back to the level it started from? What are the respective shares of microbic virulence and host resistance in this cycle whose regularity and definite characterisation gave it a personality before parasites were thought of? Is the decline of an epidemic due to a falling off of virulence or to the exhaustion of material susceptible under the conditions of invasion which obtain? Are the hosts which survive at the end alive because they are by nature more than ordinarily resistant, have they become resistant during the epidemic, or have they escaped by chance? The answers to these and other fundamental questions are at present simply unknown, and from the nature of the case are bound to remain uncertain if only the human facts are available Sooner or later medicine always reaches the point where progress is hampered or barred by its respect for human life and comfort, and it is only by resort to experiment on animals that one can get further. This is plainly true of epidemiology, and we welcome most heartily the beginnings which have been made in this country by Prof W W C TOPLEY and at the Rockefeller Institute by Dr L T WEBSTER and his colleagues. We say beginnings, because their study of mouse epidemics, like all really good pieces of work, has not only added substantially to our knowledge, but has made more apparent our ignorance For example, we know nothing whatever about epidemic influenza, and have not a notion why there was a dreadful pestilence in 1918, we have not the least idea why bubonic plague ceased to be endemic in England and Wales in 1666, nor can we tell at all why scarlet fever ceased to be virulent about 25 years ago, although it is still, perhaps, as prevalent as ever Very likely the explanations of all these mysteries are there for us to read, but we do not know the language in which they are written Prof TOPLEY and his co workers are trying to compile a grammar

We publish this week the third and last of Prof. TOPLEY'S Milroy lectures, commending the series to the attentive study of our readers It is necessary for their proper appreciation to realise not that the results of mouse epidemics cannot be transferred without qualification to human epidemics—that is obvious enough—but that this is the only means by which essential information can be obtained Note, for example, the table in the second lecture (p 530) which gives the state of 1160 survivors from various experimental infections as regards the presence of mouse-typhoid bacilli in the spleen, the majority have not escaped infection nor completely recovered from it, but still contain live microbes, and under some circumstances would be capable of starting a fresh outbreak One of these conditions Prof TOPLEY has defined as the addition of fresh normal mice to the population, this will result in further deaths of the survivors from the previous epidemic as well as among the new immigrants—a most curious demonstration We are not attempting to discuss at length the points raised by the mass of work which has been accomplished, we can only emphasise the fact that by it we are for the first time getting definite facts on many points where we have had to be content with surmise and inference, and we hope that the Medical Research Council will continue and expand its support of an admirable enterprise

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## SIGNED ARTICLES IN THE PUBLIC PRESS.

THE signature by medical men of articles in the press has been receiving notice for some time, interest being revived regularly whenever there is a cognate discussion in the General Medical Council The matter has been made recently the subject of a pronouncement by the Council and the editorial columns of many daily and weekly papers have had references to it. From these it becomes clear that there is a widespread desire on the part of the public to receive sound medical information through the medium of their newspapers, and the press, designing to meet the demand, has, in certain cases, resented the difficulties which are experienced Editors do not sympathise with the reluctance of medical men to satisfy this demand, or at any rate to satisfy it along what seem to editors the right lines. And this in itself proves that the situation is not a simple one Especially the reasons are not
which have led the General Medical Co
circumstances, to hold the writing of
in the press as "infamous conduct

respect"; yet it is a fact that on the comparatively few occasions when practitioners have incurred the censure of the Council for the insertion of such articles the logical attitude of the Council cannot be challenged, or only in a tentative manner. No medical man has been "molested"—to use a word frequently employed—by the Council, when he was giving sound medical advice or information, neither intruding his own personality nor dogmatising on disputed pathology; the penalty has always been incurred through the injudicious or self-advertising nature of the communications, resulting in possible deception of the public. The memorandum now issued by the General Medical Council, through the Registrar, states definitely that the publication in the press of articles on medical subjects by practitioners has not been condemned by the Council, unless it has been proved that the articles come under the terms of the warning notice of the Council against advertising, or are otherwise of an objectionable nature. The responsibility rests with the Council to decide whether any articles signed by a medical man in the press do constitute advertising or are objectionable; and when a practitioner, with due formality, is asked to explain his conduct, the issues are heard in public (though not the deliberations of the Council upon them), the impeached man being present, and, if he chooses, being represented by counsel or solicitors. A judicial assessor assists the Council in regard to any points of law and indicates the legal weight of the evidence, so that all precaution is taken against hasty or improper action. Some critics of the Council have certainly not been aware of the safeguards possessed by the practitioner.

The attitude of the British Medical Association was made public at the Representative Meeting last year, when the policy of the Association in reference to the contribution of articles on medical matters to the press was formulated in a clear report. This report held that it was legitimate, or even advisable for medical practitioners, who could speak with authority on the question at issue, to contribute to discussions in the public press, but stated that discussions on disputed points of pathology or treatment should be avoided. The matter would be simple if it were possible for the medical article to be at once devoid of reference to pathology, unconcerned with treatment, and at the same time to be the sort of article which the public press seeks, because it is what their readers desire to have placed before them. And this is one reason why the situation, as we said above, is not a simple one. The articles which medical men are begged to supply to the press almost always deal with pathology or with treatment or both. So that the points to be discussed, if the real ethical difficulties are to be faced, are not provided for either in the expressed opinion of the Representative Body of the British Medical Association or in the memorandum of the General Medical Council. The Council could not possibly pronounce all articles in the press which had pathological or therapeutical references to be indications of ethical laxity; and the British Medical Association could not possibly say that because an article was silent on pathology and therapeutics it contained no element of professional offence. The General Medical Council is concerned with preventing the appearance of articles of a self-advertising or objectionable nature, and the articles which will lead directly to penal interference are those where the self-advertising takes the form of giving advice on disputed pathological questions from an assumed superiority of knowledge. Many articles which are not objectionable, in that they do not mislead the public scientifically, may bring their authors before the public in a manner that their colleagues think unfortunate; they may acquit the author of self-advertisement but still consider that he has secured a measure of publicity in an undesirable way through his action in writing the articles. This is why a practitioner whose name comes before the public through the announcement of simple hygienic lessons is accused of self-advertisement; he does not offend by pretending in so many words to superior individual knowledge, but the signing of the article confers that quality upon him, and it is the quality which the journal issuing his contribution would suggest that he possesses. He is really doing good, but the inconvenience of his conduct is that, when another man does the same thing and in the other man's article direct advertisement can be detected, so that his name is removed from the official list of the profession, the public considers that an unfair difference of treatment has been meted out by the General Medical Council.

The practitioner who desires to sign an article in the press should feel sure that what he has to say needs saying, that he has the right experience from which to say it, and that he is not introducing to an audience, unable to doubt, from technical knowledge, the theories, deductions, or opinions which he could not support among his colleagues. It is an act of vanity, which may have mischievous consequences, to promulgate personal views where they are unnecessary and where they cannot be challenged. The practitioner who accepts an invitation to contribute a medical article to the press, having similar considerations before him, should feel sure that the public will gain by the information which he has to give, and that it has been sought from him because he is admitted by his colleagues to be an authority. And thereafter he should remember that, if he gains in public esteem he may none the less be held to have broken the spirit though not the letter of medical ethics. This is a consequence following either upon the right or the wrong conduct; and the fact that it may occur in either case shows again that the situation is not simple.

## MEASLES.

FOR the third week running more than 100 deaths from measles have been reported in the 105 great towns of England and Wales. In years when measles is prevalent this high mortality is not unusual. But is it still inevitable? Is it impossible to save these lives? Or are they lost because the fullest use is not made of modern knowledge of the disease—because a certain fatalism or indifference still governs medical opinion? That measles may have disastrous results is fully recognised; its complications and sequelæ are known to everyone. Yet the fact that in good surroundings it is rarely fatal gives a semblance of reason to the opinion that it is a trivial complaint; and it is thought of with the less concern because infection seems inevitable. Few escape it in the long run, and since one attack almost always confers lasting immunity, people think that a child may as well get it over. That, however, depends on circumstances. Certainly there is little enough harm in allowing children to take the disease in well-appointed, airy homes, where they can be properly looked after, and where there are no foreign bacteria to take advantage of the chances offered by inflamed nose and throat and bronchi. Here measles is rightly regarded as of little account. But in the overcrowded houses of the poor it assumes a different and deadly character; and accommodation in fever hospitals cannot, as a rule, be provided until some complication occurs, when it is often too late. In schools, hospitals, and other institutions an outbreak of measles is wholly undesirable, because it reduces the sufferer's resistance to the organisms carried about by his companions, against which he has not acquired effective immunity. Thus an overlooked middle ear infection may be lighted up, risking the spread of otitis through a school; whilst diphtheria or some other fever supervening on an epidemic of measles may be a calamity. It makes a difference, moreover, at what age the child catches the infection. In the outbreak at Camp Wheeler in the U.S.A. in 1917 it was found that all the recruits, sooner or later, took measles unless they had had it before, and it seems that effective inborn immunity is rare, if indeed it occurs at all. The exception is the new-born infant who is said not to catch measles even from the mother nursing him—a fact of great theoretical interest. Apart from this, age has little bearing on susceptibility, but it has an important influence on mortality and the danger grows less as the age approaches 5 years. For this reason it is useful to prevent measles in young children even if the prevention is only temporary, and for the reasons stated above it is most desirable that this usually minor complaint should never be allowed to take its course in schools, institutions, or unhealthy homes.

That is almost axiomatic. But is there any way of preventing people from catching measles, apart from quarantine? The answer is that there are methods used abroad which ought to be tried more widely in this country and which, on the evidence, may be assumed effective until proved otherwise. For the moment it will be convenient to leave on one side the interesting attempts of Morey to produce active immunity by painting the throats of new-born infants with nasal discharge from measles patients, and consider only the uses of serum, which has been repeatedly described in our columns.[1] Serum from a convalescent case of measles was first tried in 1916 to protect susceptible children. Since 1919 it has been used in many continental cities and in North and South America. Degkwitz, of Munich, has worked out the doses needed to confer immunity, and considers that on entering a house where there is a case of measles the doctor should immunise the contacts with convalescent serum. Supposing that the rash has but just appeared, a dose of 3 c.cm. will give complete protection to the other children. If the disease has been developed for 24–48 hours some 5 or 6 c.cm. will be required; whilst if the time since exposure to infection is more than three days, larger doses will be needed and protection is less certain. Early injection of serum only confers a passive immunity, which lasts but a few weeks. (Not that this would not be extremely useful in certain circumstances, as for instance, in school outbreaks.) But where injection is not made until five to seven days after exposure a modified and mild attack results, which is said to give lasting protection. If the exact date of exposure to infection is known it may therefore be worth while to delay the injection and get an attenuated attack so that the child may be protected against further accidental exposure, which is almost certain to occur sometime or other. If the claims of Degkwitz, Debré, and others are justified, it is clear that we may possess an effective method of controlling measles. We have a means of preventing serious outbreaks in schools and hospitals, of mitigating the severity of attacks in cases seen up to seven days after exposure to infection, and of conferring permanent or temporary immunity according to the exigencies of the occasion. The careful and considered use of such a method may well rob the disease of its worst perils. In Paris, New York, and elsewhere centres have been arranged for the collection and testing of serum to ensure freedom from syphilis, tuberculosis, and malaria. Where the serum of convalescents is unobtainable the serum or whole blood of an adult who has suffered from measles in childhood may be used instead, but a larger dose is needed—e.g., 12 c.cm. serum or 35 c.cm. whole blood for a child of 3 years—and this is only recommended for country districts where no stock serum is available.

Dr. R. Veitch Clark, medical officer of health for Manchester, is reported to have said that the country could easily be rid of measles if the public would coöperate and overcome its prejudice against injection. It would be something, however, if we could say of measles, as Sir George Newman recently said of small-pox, that only those had it who preferred it. The suggestion that to eliminate measles may be feasible has raised other interesting, if academic, questions: Would such elimination be wise? Would not a nation freed for a generation fall an easy prey to infection brought in from abroad? When such infection came would it not play havoc with a population which had lost its power of resistance? For 65 years the inhabitants of the Faröe Islands were free from measles, and when, in 1846, it was reintroduced, over 6000 of the 7782 islanders contracted the disease and many died. Even more striking was the epidemic in Fiji in 1875. Measles had been unknown in the islands and presumably the people had no specific resistance whatever. Amongst the population of 150,000 there were about 40,000 fatal cases. This fact, at first sight, lends colour to the view that it is better to keep the measles we have than loose a plague like this upon our descendants; but Corney, who observed the epidemic, considered that it would be easy to lay too much stress on the absence of inherited resistance in the natives. He put the mortality down mainly to lack of care for the sick, to the bad habits of the people (who treated their fever by lying in rivers for hours at a time), to starvation due to the whole population being stricken at once, and to want of cleanliness. The disaster was mainly caused, he considered, by factors which would not operate in a civilised community. Attempts to stamp out measles in this country need not, we think, be hindered by any fear of massive reinvasion. Complete eradication is hardly practical politics at present, but even if at some distant date the population were rid of measles for a generation, there is little reason to think that they would become remarkably susceptible to reinfection. Any situation that arose could presumably be controlled by a health service using the means which had originally banished the disease, and there seems no reason for panic about the plight of our grandchildren.

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## HEALTH ADMINISTRATION IN WALES.

The death of Sir David Evans at Cardiff on March 18th recalls an interesting, and in many ways successful, experiment in national health administration, for in 1918 he was appointed director and legal advisor of the King Edward VII. National Memorial Association, which undertook responsibility for the treatment of tuberculosis throughout the whole of Wales. Under his guidance the Principality was able to provide rapidly and economically institutional accommodation on a scale unapproached by any except a few of the very large sanitary authorities in Britain. The scheme has now been in existence for 10 years and has not escaped criticism, directed chiefly to its effect in removing tuberculosis from the purview of the local health departments. The problem of tuberculosis, as may be seen from the history of its decline before ad hoc schemes came into being, is not merely one of treatment and specific prevention. Even in this respect the vague impression that the local health department has no official concern with tuberculosis is rejected in the negligence among practitioners in Wales of that notification of the disease on which its early treatment depends. Still more detrimental, however, has been the removal of the stimulating effect which tuberculosis might have exercised on the interest of contracting local authorities in the problems of housing and poverty in relation to health. However distinguished and able the medical staff of the Association, it is clear that their contact with other health activities must be precarious and occasional. From the purely medical point of view it is difficult to assess the results of the scheme. It appears to be the case that the mortality from tuberculosis in the rural areas of Wales is declining more rapidly than in the whole of England, but this is probably associated with the greater distance it had to fall. On the other hand, the annual reports of the medical officer of health for Cardiff contain repeated references to the high tuberculosis death-rate and the unique position of that town in having a slower rate of decline in the tuberculosis than in the general death-rate. The Consultative Council of the Welsh Board of Health is now proposing a radical change in the medical services of the Principality as a whole, which would in effect bring them into line with the National Memorial by the creation of a National Health Council for Wales. We are not sure that the disadvantages of any such scheme might not outweigh its benefits, for it would interpose between the Welsh Board of Health and the local authorities a new body either having little more executive function than the Board itself, or else exercising such powers over an unworkable area. Wales and Monmouthshire together cover more than five million acres and many localities in this area are difficult of access. Only one county in England approaches Wales in acreage, and it has been found convenient to split up this county—Yorkshire—into three parts for efficient administration. In any attempt to measure the influence of local methods of administration on health statistics, it is important to remember that the large urban districts of the Southern half of the Principality differ in only one material respect from the bulk of similar areas in England—namely, their almost entire dependence on the coal industry. Even in this respect Wales has its counterpart in some English areas, notably in the County of Durham. All such urban districts constitute a grave public health problem, and their effect on the mortality returns is reflected in the statistics published by the Registrar-General both for Wales and the Northern Counties. Even the rural districts of both Wales and the North of England figure badly in these statistics, but here again it should be remembered that the rural districts of Glamorgan and some of the Northern Counties, which weigh so heavily the statistical returns, are much more industrial in character than those of the Midlands and the South of England. Group comparisons are apt to be fallacious. Nevertheless it is a fact that the purely rural parts of Wales, as distinct from the populous so-called rural districts, are unfortunately placed in respect of maternal mortality and pulmonary tuberculosis, and that many, even of the counties in North and Mid-Wales, are themselves too sparsely populated and too poor to form effective public health units. But it may be taken for granted that any scheme which aims at diminishing the heavy maternal mortality in the rural districts must be largely a local scheme, and will gain little or nothing from central administration. The one sound argument for enlargement of the areas of health administration is financial. Few of the rural areas either in England, Wales, or Scotland would be able to face the expenditure on medical services which transfer of the functions of the Poor-law authorities will ultimately involve. No doubt it is partly for this reason that the Minister of Health is suggesting the councils of counties and county boroughs as the new authorities. Some of the Welsh counties may be too small to be efficient units, but public health and allied legislation already enables combination of authorities for specific purposes. Development of the policy of joint action would permit of reasonable enlargement of areas to meet financial difficulties without losing that homogeneity of interest which is so apt to be lost in national schemes. We commend the Consultative Council's proposal to the critical attention of all who are interested in the wider aspects of public health.

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[1] The Lancet, 1922, i., 591; 1923, ii., 470 and 615.

# Annotations.

"Ne quid nimis."

## INFECTIVE ENDOCARDITIS.

The subject of infective endocarditis which Sir Thomas Horder has chosen for the Lumleian lectures is of special interest to the practitioner, for it is one of a group of subacute infections which have become a conspicuous feature of the medicine of the last 15 years. A great deal has recently been written, both from the clinical and the laboratory point of view, on infective endocarditis. The general trend of opinion nowadays is to recognise two main varieties of infective cardiac disease, the pericarditis of rheumatic origin and the endocarditis of bacterial origin. Dr. Carey Coombs expressed this view very clearly in the Long Fox Memorial Lecture delivered at Bristol on Dec. 9th, 1925, when he said "the heart of rheumatic infection is attacked in all its parts at once, obviously through the coronary vessels and their ramifications, while in ulcerative endocarditis the lesion is primarily and mainly one of the inner lining of the heart, the myocardium being injured only occasionally, either by direct extension therefrom or by embolism, while the pericardium never suffers." These different pathological lesions in the two types of infection have been commented on also by Prof. W. S. Thayer in his voluminous report entitled "Studies in Bacterial (Infective) Endocarditis," published as one of the Johns Hopkins Hospital Reports (vol. xxii., fasc. 1). He studied clinically and anatomically 198 cases of bacterial endocarditis occurring in the Johns Hopkins Hospital for the past 34 years. For the sake of comparison he analysed also 24 cases of uncomplicated, fatal, acute and subacute rheumatic heart disease. One of the chief interests of this research is in the comparison of the clinical course and pathological lesions in the different varieties of bacterial endocarditis. These facts are set out in great detail in this report. The ætiological element in this series of cases of bacterial endocarditis turned out to be in 55·5 per cent. of cases the streptococcus, pneumococcus in 13·6 per cent., *Staphylococcus aureus* in 12·1 per cent., gonococcus in 11·6 per cent., *B. influenzæ* in 4 per cent., while *Staphylococcus albus*, *B. pyocyaneus*, and *B. anthracis* were represented only very rarely. The commonest type of lesion caused by these bacteria was a verrucous, vegetative, or ulcerative, valvular or mural endocarditis, associated sometimes with acute, often suppurative, pericarditis and focal, sometimes suppurative, myocarditis.

On the clinical side Prof. Thayer distinguishes two main forms of bacterial infective endocarditis. In the first the lesions appear commonly as complications or sequels of some focal inflammatory process with an accompanying septicæmia, which is usually rapidly fatal. Under such circumstances the existence of cardiac disease is generally masked by the symptoms of the acute infection of which it is a complication. In the less acute cases which run a course of several weeks the changes are usually vegetative or ulcerative. In most acute septicæmias the cardiac disease is clinically a mere incident in the course of the primary infection. The second main form of bacterial disease of the heart is that associated with infections with attenuated streptococci, notably *Streptococcus viridans* and with *B. influenzæ*, the distinguishing feature of this disease being that the endocardial focus is truly the main seat of the disease. The course of the malady is slow, subacute or chronic, lasting over weeks and months. The onset is insidious; the portal of entry obscure; the areas involved are generally the seat of previous chronic rheumatic disease. The manifestations are rather those of subacute or chronic septicæmia to which later the characteristic embolic phenomena are added. Here the subacute endocarditis is in itself the essential pathological entity. In contrast to these two varieties of bacterial heart disease we have the rheumatic type of heart disease on which Prof. Thayer cautiously remarks that "the positive proof that a definite specific strain of streptococcus may be regarded as the causal agent of rheumatic fever can hardly be said to have been afforded." Rheumatic fever and chorea stand together as manifestations of that infection which is associated with the peculiar acute cardiac changes which we class as "rheumatic." Here the lesions affect the entire heart and consist of the perivascular Aschoff bodies, the frequent serofibrinous pericarditis, the slowly developing and cicatrising valvulitis and verrucous endocarditis, notably of the mitral orifice. These processes terminate in the familiar picture of chronic valvular disease of the heart with disseminated perivascular fibrosis of the heart muscle and often with adherent pericardium.

Prof. Thayer is unable to throw much new light on the question of treatment of infective cardiac disease. He finds little encouragement can be gathered from our therapeutical experiences. Apart from rest and proper nursing he has little to recommend. It is disappointing that specific treatment has been so unsatisfactory even in those cases where the causative microbe was accurately identified and facilities were available for specific vaccine and serum treatment. Prof. Thayer observes that in subacute infective endocarditis the patient rarely escapes meddlesome treatment. "The anxious family, showered with well meaning advice from many quarters, is for ever urging the doctor to try some new and often absurd method of treatment, and the unfortunate patient, whose main chance lies in peace of mind and body, is surrounded by an atmosphere of perpetual turmoil, and, if he be well-to-do, is often subjected to a succession of consultations which alarm and tire him and lessen the few chances of recovery that are his."

## SPECIAL HOSPITALS AND CHRONIC DISEASE.

WE have received from Dr. Berthold Beer, of Vienna, an interesting letter enclosing two articles written by him to Viennese papers, his letter being prompted by reading the reports of the recent references in the House of Commons to the problems of unqualified practice. Dr. Beer has been well known for a long period to many in this country as keenly interested in these problems, and he gives it as his opinion, founded on experience in Vienna, that attempts at diminishing unqualified practice by legislative measures are doomed to failure. Here the experience in Austria is exactly what those in this country who have studied the subject most closely would have expected. He believes that one of the most effective measures against the prevalence of unqualified practice would be to secure improvement in dealing with prolonged and chronic cases by means of special hospitals for such cases, and this is a good point, for it is from chronic cases that the amplest harvest of the irregular practitioner is reaped. If there are greater opportunities for medical practitioners and medical students to learn how to help cases of chronic crippling disease, there will be less reason for the public to resort to those the value of whose services has never been tested. This idea was propounded many years ago by Prof. v. Ziemssen, of Munich, and undoubtedly considerable advances follow in the treatment at central clinics for the purpose of chronic diseases like scleroderma, contractures, keloid, and adherent scars following burns. Dr. Beer believes that relief would be obtained after more intensive study for various conditions of deformity of the joints as well as for the disabilities termed "rheumatoid arthritis"; and he points in support of this view to the amount of benefit which can be given to cases of old paralysis and muscular atrophies after lesions of the nervous system by appropriate mechanotherapy. In an article published in the *Illustriertes Wiener Extrablatt* of Feb. 11th, 1926, he develops this idea in an interesting and instructive manner, and in emphasising the special importance of the subject in all the countries which took part in the recent great war, he finds Germany in particular to have recognised the matter as one of national need, though he refers to successful efforts under a method of treatment introduced in Vienna during the progress of war and generally known as the Vienna Manual Method. In a sequel to this article, he points out how, in the Vienna Manual Method, women can be trained under medical supervision to give special mechanical modes of treatment with great benefit to such patients.

In all large communities, whatever the nationality, there must exist this sound reason for the development of special hospitals for the treatment of chronic disease—namely, that in the general hospitals chronic cases cannot be sheltered owing to the pressure on the beds. We all know too well that these cases are often discharged with the stigma of incurability when, under more prolonged and more specially devised treatment, they might have been restored to some degree of working capacity. Dr. Beer's epigram, "the chronically ill require chronic treatment," says the last word if any want convincing.

## LOUVAIN LIBRARY.

IN a recent *Bulletin* of the John Rylands Library Dr. Henry Guppy, D.Ph., librarian of the John Rylands Library, describes the reconstruction of the library of the University of Louvain, detailing the contributions of this country to the work. The destruction of the famous library of the University of Louvain was one of the earliest shocks to the culture of the world following on the outbreak of war; it brought to the public conscience a knowledge of how the civilisation of the future might be jeopardised by the wrecking of the past. The arousal of this feeling led to a scheme for the reconstruction of the library, inaugurated by the governors of the John Rylands Library in the first year of the war. Publicity to that scheme was given immediately in these columns, and those of our readers who contributed to the happy result will be glad to learn that the University of Louvain, through the British Committee, has obtained 55,782 volumes, forming a live collection of books to replace, as far as possible, the grand library so miserably destroyed. The twelfth consignment of books, probably the last that will be sent, was despatched in July of last year, and consisted of 68 cases containing 6071 volumes, including the splendid collection of oriental and general literature bequeathed to his alma mater by the late Bishop of Salford, Dr. Louis Charles Casartelli. In the report Dr. Guppy points out that, although definite action had sometimes to be postponed, British Universities, learned societies, and libraries had signified their desire to refurnish the Louvain Library at the time that the appeal was made by the John Rylands Library, while America's part in providing a million dollars for reconstruction, and a further donation of 125,000 dollars with which to create a trust for upkeep, is recorded with gratitude. The first stone of the new building was laid on July 28th, 1921, in the highest part of the town overlooking the Palace du Peuple, the exact spot where a little Belgian force defied the German army. No attempt will be made to reproduce the destroyed building, but every detail of the new design is Flemish, and brick and stone of local origin will be used in its construction. In the completed building there will be accommodation for two million volumes, but the English gift will be kept apart both on the shelves and in the catalogue. Thus, the attempt will be clear "to acknowledge our indebtedness to the incomparably brave nation and their valiant Sovereign, who sacrificed all but honour to preserve their independence and thereby safeguard the liberties of Europe." Although the destruction of the Louvain Library has resulted in an irreparable loss to literary history and associations, there is a brighter side to the situation, and this finds expression in Dr. Guppy's report. A university library is, in a sense, a symbol of education, and education has in modern times been completely revolutionised. Many of the books which have now found their way to Louvain, replacing works of interest through antiquity and historical association, might otherwise never have reached the Belgian University. The reorganisation of the Louvain Library, especially in the domain of investigation and research, is an admirable event for education.

## TUBERCULOSIS IN MENTAL HOSPITALS.

In a paper read recently before the Tuberculosis Society Dr. E. A. Evans, inspector of the Board of Control, drew attention to the high incidence of tuberculosis in mental hospitals. Apart from Poor-law institutions, naval and military hospitals, and the criminal lunatic asylum, with none of which, said Dr. Evans, was he concerned that evening, the daily average number of patients resident each year between 1910 and 1925 ranged between 87,000 and 106,000. The tuberculosis death-rate per 1000 living had varied among these patients from 13·8 in 1910 up to 45·6 in 1918, and down to 7·3 in 1925, the corresponding death-rate for England and Wales in 1920, for ages over 15 years, being 1·3. Since mental hospitals differ widely in size and in type of management the death-rate from tuberculosis is found, as might be expected, to vary with the type of institution—e.g., a much smaller death-rate from this disease is found in the establishments for private patients, and a similar disproportion is believed to exist in the private annexes to rate-aided institutions. In comparing the tuberculosis death-rate in mental hospitals with that for the general population several sources of fallacy must be borne in mind. For instance, as regards age distribution, in the general population about 27·4 per cent. are under 15, while in the mental hospitals the percentage for this age-group is about 0·6; indeed, nearly 50 per cent. of the population in mental hospitals are over 45. Again, one might reasonably expect that with this high proportion of aged persons in mental hospitals the number of deaths from respiratory diseases other than tuberculosis would in these institutions exceed that for England and Wales, but as a matter of fact the percentage is 7·7 for the mental hospitals and 20·2 for England and Wales. This discrepancy is accounted for by Dr. Evans by the greatly preponderating percentage of post-mortem examinations carried out in mental hospitals. It is significant that in county and borough mental hospitals in which the percentage of post-mortem examinations carried out is 65·5 the tuberculosis death-rate is 11·2 per 1000, while in registered mental hospitals with a post-mortem examination percentage of 12·6 the tuberculosis death-rate is only 4·4 per 1000. The very definite correlation between infrequent post-mortem examinations and low tuberculosis death-rate would suggest, as Dr. Evans pointed out, that extended autopsies might reveal more deaths from tuberculosis among the aged at the expense of the diagnosis of chronic bronchitis.

Dietary defect had, said Dr. Evans, been widely blamed for this high mortality in mental hospitals. For the purposes of a research carried out in 1922 hospitals were grouped in three classes: (1) those with dietaries of less than 2300 calories; (2) those between 2300 and 2600 calories; and (3) those over 2600. With each rise in caloric value a correspondingly lower incidence of tuberculosis was found and, in the case of males (but not of females), a similar drop in the death-rate. Adequate precautions are taken to ensure that no infected meat is used in mental hospitals, but Dr. Evans regards the milk service as less secure, although an increasing number of hospital authorities insist on periodic guinea-pig inoculations with centrifugalised milk from every animal of the supplying herd. Recent substantial improvements in the dietaries have been reflected in the falling incidence and death-rate of tuberculosis. Another factor investigated has been the effect of the size of the hospitals. As a general rule the larger the hospital the higher is the death-rate from tuberculosis owing, no doubt, to the congregation of large numbers of persons in common rooms and dormitories. For long the safety of the patients was considered to preclude the free opening of windows, a dislike for prison-like architecture also preventing the use of iron bars which would have allowed their wider opening. Greater risks are now taken, and in many hospitals a wire frame is fixed outside the window, while window blocks are being removed from the upper sashes of ground floor rooms.

The prevalence of tuberculosis varies among the clinical types of mental disease. Dr. Evans finds a distinct preponderance among the congenital cases, especially those with epilepsy, and among the dementia præcox or primary dementia patients. In the former group the tuberculous disease runs a chronic course, the patients dying only after long residence. Tuberculous patients suffering from melancholia or dementia præcox, on the other hand, usually die within four years. Dr. Evans believes that there is a definite impairment of metabolism due to, or associated with, the impaired mental condition. It is usually necessary to depend upon the personal observation of the medical and nursing staff for the first signs of illness among the insane, otherwise patients may be found well advanced in serious illness before any complaint is made. At present there is an average of about a dozen patients with active pulmonary tuberculosis in each of the county and borough mental hospitals. In about three-fourths of the hospitals special provision, in the shape of verandahs, open-air shelters, isolation blocks, or special wards, is available for the segregation of these patients.

## THE HAND OF MR. F. T. PAUL.

At the conclusion of the clinical meeting of the Liverpool Medical Institution on March 11th, Mr. J. C. M. Given presiding, the members assembled in the lecture theatre to witness an interesting little ceremony—namely, the presentation to the Institution of a bronze cast of the right hand of Mr. F. T. Paul, executed from a cast by Mr. H. Tyson Smith. Mr. Frank Jeans, the donor of the bronze, said that Mr. Paul's name was known to every surgeon as a pioneer and an inventor, "Paul's tube" being as epoch-making an instrument as that of another Liverpool surgeon, "Thomas's splint." Therefore he thought that, as a remembrance of Paul, a past president of the Liverpool Medical Institution and a most gifted operator, a cast of his hand would be acceptable to the Institution. "Paul's operating in the heyday of his manual efficiency," he said, "always made me think that he did with his hands what Pavlova did with her feet, only Paul's work was much more useful. I have an additional reason for wishing to pay a tribute to Paul, because it is to him that I owe the continued existence upon this earth of my wife—but that is a personal matter." Mr. Paul, in acknowledging the courtesy of the Institution in accepting the gift and the kindness of Mr. Jeans in thinking of it, admitted that at first he had regarded the matter somewhat as a joke, and, while confessing that he had always been fond of using his hands from his earliest years, he reminded the audience that "a gentle touch comes from the heart rather than from the hands, a touch inspired by a true sympathy with the patient's tissue—in this way only could a man attain the hand of a surgeon." The President then expressed his pleasure in accepting the bronze cast in the name of the Liverpool Medical Institution, and thanked Mr. Jeans most sincerely for his very acceptable gift. All our readers will acknowledge the fitness of the retention in the Liverpool Medical Institution of a permanent memorial of the work of Mr. Paul. Not only is he a great as well as a skilful surgeon, but he was one of the founders of the Liverpool Medical School, and from its earliest days his work has contributed to the building up of the great tradition of that school.

## THE NEEDS OF UNIVERSITY COLLEGE HOSPITAL.

DEVELOPMENT has its embarrassing side for those who have to find money for the upkeep of their great possessions. University College Hospital offers a case in point, and clearly its income must increase to meet expenditure if the hospital is to make the most of its new good fortune. The Rockefeller Foundation's grant of £1,205,000 for the erection of more buildings and the equipment of research does not affect the ordinary income except in so far as it will make for economical working, and, unfortunately, the annual deficit remained at about £11,000 last year. Doubtless many subscriptions have been diverted into the fund for endowing 60 beds in the new maternity block which the Prince of Wales is to open on May 28th; £180,000 has been collected for this purpose. The expenses of this collection, it is satisfactory to note, were very small indeed, and the interest earned on the earlier contributions more than covered the whole cost. "We did not advertise for money," says Sir Ernest Hatch, the chairman, "we went and fetched it." Besides these maternity wards, now so well provided for, there is a new nurses' home and medical officers' quarters in Huntley-street, which is already complete, and the Royal Ear Hospital, which is to be ready for use very soon, thanks largely to a gift of £65,000 from Mr. Geoffrey Duveen, a member of the committee. The hospital's existing accommodation had become more and more inadequate, but all these extensions will furnish 203 additional beds. Most of them have been furnished indirectly out of the American grant, but the Rockefeller Foundation rightly considers it no part of its work to care for the sick poor, except by research and medical education. London, therefore, must see to it that the fullest use can be made of what has been provided, and there will be a ready response to the quiet and inexpensive appeal which is being launched. Another £15,000 a year is needed to bring the ordinary income up to a more satisfactory level, and the fact that a great future is obviously in store for the hospital should ensure that this sum is found.

## CHEWING-GUM AFTER TONSILLECTOMY.

IN a recent number of the *Therapeutic Gazette* (Feb. 15th, 1926), Dr. William H. Spencer, of Philadelphia, draws a somewhat lurid picture of the septic condition of the throat after tonsillectomy, and of the systemic absorption of toxins from the "putrefying mass" which covers the wounds. He is scornful on the subject of gargles, though he does not mention the probability that they do not reach the tonsillar fossæ at all, and it would seem that he has no experience of spraying or syringing the throat in this condition. But he is an enthusiastic advocate of the use of chewing-gum after operation, and states that "the throats of tonsillectomised individuals using chewing-gum as an after-treatment do not become infected. Secondary hæmorrhage is less frequent." (It is very rare in any case.) "Healing is more rapid. A full diet being taken, resistance of the individual is maintained, little or no weight is lost, and no post-tonsillectomy recuperation period is needed." "Chewing stimulates the secretion of saliva, which, being swallowed, laves constantly the wounded surfaces and lubricates the pharyngeal mucosa. The attrition of swallowing keeps down the membrane formation to a minimum, so that the usual white patches covering the tonsillar fossæ, which have often been mistaken for diphtheric membranes, are in some cases entirely absent." Patients might not take so kindly to this method here as in a country where they are already used to it; in the United States, according to Dr. Spencer, "so universal is the habit that it can be chewed in public without attracting the slightest attention." Nevertheless, surgeons here who are not satisfied with their patients' convalescence under the usual methods, may like to try this form of after-treatment, which is, at any rate, simple and harmless.

## LONDON UNIVERSITY.

THE long expected report[1] of the Departmental Committee of the University of London appears by a curious coincidence a few days before the surrender of the promised Bloomsbury site. For it seems certain that next week the conditional offer of this site to the University for its central buildings will lapse definitely and its value be claimed by the Chancellor of the Exchequer. The event might have passed unnoticed had it not been for a demonstration of students who last week beat the bounds of what was to have been their home on the same day as a petition signed by over 4400 students and teachers was handed to the Prime Minister, asking the Government that all should not be surrendered and that part of the site should be reserved for residential quarters and a students' Union. Even if no promise has actually been broken, the students may be right in claiming that the engagement ring should not be returned; and they may take comfort fom the words of the Departmental Committee, which states that, wherever the central offices of the University are to be located, the creation of a strong University Union is eminently desirable and is a proper charge on the funds of the University. The report of the Departmental Committee differs from the Final Report of the Royal Commission of 1910, issued in 1913, and of the Haldane Commission of 1900, in being a readable document of 52 pages with 5 pages summarising its recommendations. The report makes no attempt to present a record of the development of the University, nor to discuss in detail its aims or constitution. The Committee frankly regards it as impracticable to give effect to some of the major recommendations of the Haldane Commission. It has been concerned to devise an immediately practicable scheme for better government and organisation, evolutionary rather than revolutionary, and yet embodying the essentials of a university in a great centre of population. The fear raised by the Haldane Report of an attack on the system of degree examinations for external students is found to be groundless. In the evidence laid before the Committee no responsible body claimed the abolition of these degrees and none of the Committee's recommendations is designed to restrict the present facilities available for external students. The Committee refuses to emphasise the distinction between external and internal sides of the work of the University, provided that the authority of the teachers and of the teaching institutions on the academic side is safeguarded. As time goes on it assumes that internal graduate members will gradually outnumber the external graduate members, so that the organisation of the external side will become increasingly dependent upon the support of internal graduates. The Committee recommends no further extension of incorporation which is now not regarded as an effective instrument for securing financial and educational control. It has been influenced largely by the difficulties which have had to be surmounted in the case of the medical schools and of the Imperial College at South Kensington. No plan of separating the schools from their parent hospitals or of selecting from among the 12 general medical schools three which should qualify for incorporation has been evolved satisfactorily. Nevertheless, in the meantime the closer inter-relation of these schools, along with the aid of the University Grants Committee, has enabled six of them to organise units and to qualify for University chairs in clinical subjects. Some of the advantages to be hoped for from incorporation have thus been achieved without it. But the system of direct Government grants from the Treasury to unincorporated schools is condemned by the Committee, which regards such a course as indefensible and inconsistent with any form of University government; and one of its main proposals is to set up a University Council to determine the allocation of funds for the execution of University policy. The proposed constitution of this Council and of a reorganised Senate and of the five standing committees of the Senate are set out clearly in the summary of recommendations. No one who reads the report can fail to appreciate the spirit in which the Committee, under the chairmanship of Mr. E. Hilton Young, which included in its number Dr. H. L. Eason, has done its work, and all those who feel strongly the dangers of interfering with the delicate works of a going concern may breathe more freely.

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[1] Board of Education: Report of the Departmental Committee of the University of London. Cmd. 2612. 1926. H.M. Stationery Office. 1s. 3d.

## CONGENITAL DEFECT OF ARMS.

THE wonderful results which may be achieved with very small means are in no cases more striking than in those of congenital defect of the limbs. In the case of the lower extremity, persons suffering from defect of the legs have ridden on horseback across country, and of this A. M. Kavanagh, the well-known sportsman and politician, who had neither hands nor feet, was a striking example. Numerous cases of congenital defect, or very early loss of the upper limbs, are on record in which the sufferers have made their feet do duty for hands with an astonishing degree of success. The celebrated Miss Biffen earned a niche in the temple of fame of the Dictionary of National Biography, and there have been painters on the continent who defied the disadvantages of their birth and achieved a large measure of technical success. Only two years ago a young man named Elroy, whose arms had both been amputated at the shoulder-joints in infancy, exhibited the wonderful adaptation of his feet, with which he achieved various difficult tasks, as well as performing nearly all the offices of daily life for which the hands are normally used. He used no artificial help, yet he possessed no muscle and carried out no coördinated movements of which the normal infant does not possess the potentiality. In cases of congenital defect of the arm it is generally found that, however small the rudiments of the upper extremity may be, its owner can do more with the bare stump or stumps than he could do with the most ingenious and well-fitting prosthesis. Hitherto surgery has been able to do little for such cases which it has seemed best to leave to their own wits and persevering energy and to the education of experience.

Recently, however, Dr. Harry E. Mock, of Chicago, has reported in the *Journal of the American Medical Association* (Feb. 20th, 1926) a case of congenital defect of both arms and talipes equino-varus and defect of toes in both feet, upon which he operated in 1920. Before operation the patient, who was manifestly very intelligent and had the will to persevere, had been able to do a number of things for himself, by using his feet, despite the absence of all digits, except a short great toe on the one foot and a long one on the other. It may here be noted that the deformity of varus of a moderate degree is rather an advantage than a drawback when the foot is to be used in lieu of a hand. Moreover, this boy was able to do a surprising number of things by opposition of his right shoulder and cheek. Between them he could grasp and use a pencil and even a small saw, and with them he learnt to seize and turn a door handle. The boy at the age of 12 could draw, write, carve wood, and weave rugs, besides washing himself and cleaning his teeth with the help of his feet. Yet he was not content to remain so unlike other boys and earnestly desired to be able to wear artificial arms and hands, if it were only for the sake of appearances. Finding from the inspection of radiographs that there was a rudimentary stump of each humerus concealed beneath the skin of the chest, although there were no axillæ, Dr. Mock decided to make use of these. By excellently planned and skilfully carried out operations he succeeded in freeing the rudimentary humeri and clothing them in muscle and skin, despite the fact that there was grave muscular defect. The boy gradually learned to move the stumps, and the result five years later is interesting as showing the connexion between function and development. The upper ends of the humeri and the glenoid fossæ, which before operation were only rudimentary, have now developed greatly after five years of exercise, and the boy is able to wear artificial arms and hands which he finds of considerable use.

The lessons to be learnt from this case are: first, that no matter how unpromising the condition, there is always a chance of benefit following well-thought-out and skilful surgical interference; secondly, that there is no knowing what development of the growing organism may follow on restored or new functions; and thirdly—and this is the most important of all—that as in war so in prosthetics the moral is to the physical as at least three to one. Dr. Mock does not specify the kind of artificial arm which was provided for his patient, and information on this part of the subject would be of considerable interest. The experience of those who had to do with the provision of arm prostheses during and after the war was most disappointing. It was found that in their daily life pensioners used even the most ingenious arms very little, if at all, and that only in the case of double amputation were they really useful except for rough work. Some of the most striking successes in the use of artificial arms have been achieved with very simple appliances. It is to be remembered, however, that the possibilities of usefulness of stumps are far less for the adult who finds himself suddenly mutilated than for the congenital case, whose growing organism develops in adaptation to its environment. In all cases, however, intelligence, the will to succeed, and what is colloquially known as grit, are the most valuable compensations to the congenital arm-cripple.

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THE Rt. Hon. T. R. Ferens, of Hull, who recently gave £250,000 to the University of Hull, has now given £20,000 to found an institute for diseases of the ear, nose, and throat in connexion with the Middlesex Hospital.

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THE Home Secretary gives notice that it is proposed to apply for an Order of the King in Council in pursuance of Section 8 (2) of the Dangerous Drugs Act, 1920, declaring that Part III. of that Act shall apply to veronal and the other drugs of the barbitone group in the same manner as it applies to the drugs mentioned in Subsection (1) of Section 8 (morphine, cocaine, &c.), and in pursuance of Section 7 of the Act to make regulations limiting the supply of the drugs to authorised persons or institutions or to persons for whom the drugs have been prescribed by a duly qualified medical practitioner.

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THE Oxford University Press will shortly publish an illustrated monograph by Dr. Jamieson B. Hurry, entitled "Imhotep, the Vizier and Physician to King Zoser and afterwards the Egyptian God of Medicine." Imhotep or I-em-Hete was one of the earliest of known physicians and was recently the subject of an annotation in our columns THE LANCET, 1925, ii., 821).

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

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## CLXVI.

## TREATMENT OF FRACTURES OF THE FEMUR.

UNDER the best treatment a patient suffering from simple fracture of the femur will be incapacitated from work for at least three months. In cases in which we fail to secure reasonable length and correct alignment some permanent disability is certain. It is therefore important that every practitioner, who may have to assume the responsibility of treatment of fractures of the femur, should be familiar with the use of splintage which is both simple and effective. Before the war the results of the operative and non-operative treatment of fractures was a subject of investigation by a special committee of the British Medical Association. In nearly every age-group operative cases showed a higher percentage of good results than non-operative cases. The suggestion to an unbiased observer was that operative technique would in time almost entirely supplant treatment by splintage. It is now generally agreed that as a result of the war the outlook is changed. Here fractures of the femur presented a problem which could not be solved by operation. The splints of the text-books got a fair trial and were found wanting. The minds of the greatest surgeons of all countries were endeavouring to devise means for fixation of the compound fracture of the femur, but only after two years did it become generally recognised that life, limb, and function could be best conserved by the use of a splint first offered to the profession by Hugh Owen Thomas, of Liverpool, almost half a century ago. During the latter years of the war it replaced all others. Its ready application allowed of its use in the front line. The fixation it offered diminished shock and prevented further injury to the tissues during transport, while the principle on which its efficiency depended was surpassed by no other in the special hospitals established for the treatment of these fractures at home and abroad. That it was effective is proved by the fact that a survey of 500 cases of compound fractures of the femur under treatment at orthopædic centres in this country showed an average shortening of less than half an inch. We may therefore assume that instruction in the use of the Thomas splint in fractures of the femur is safely established in all medical schools.

### *Splintage.*

Ideal splintage requires: 1. Replacement of the main fragments to their normal anatomical position. 2. Immobilisation of the limb so that there is no disturbance of the fragments in moving. 3. Avoidance of compression of the limb, and in the case of compound fractures easy access to all dressings. Its efficiency will be judged by the relative comfort it affords the patient during treatment and the end-results as regards function. I believe that the Thomas knee splint will meet these requirements for all fractures of the shaft of the femur below the upper third. Fractures of the neck of the femur, the upper third of the femur, and those directly involving the knee-joint may require special consideration. The deformities and disabilities following fractures inefficiently treated are almost constant, so that a knowledge of these is essential to guide us in our treatment.

### *Fractures of the Neck.*

It is not possible here to detail the symptoms and physical signs of partial separation of the epiphyses and bending of the neck of the femur in young adolescents. Where these are suspected X rays will reveal them, and their treatment follows the lines of treatment of fracture of the neck of the femur in the adult.

The common result of fracture of the neck of the femur is upward displacement of the trochanter with eversion of the limb. The X rays will show that the angle of the neck of the femur and the shaft has been reduced to a right angle, and if the fracture is intracapsular there will probably be non-union of the fragments. Pain either from non-union, adhesions, or arthritis of the hip often persists. The modern treatment of these fractures is based on a knowledge of the inevitable results of failure to reduce the fracture. Under an anæsthetic full extension of the limb is obtained by traction. It is then internally rotated to lock the fragments, and finally fully abducted in order to ensure the normal angle of the neck and shaft of the femur. This position is maintained by plaster-of-Paris for eight to ten weeks, when freedom of the limb in bed is allowed. We must still remember that weight-bearing will involve strain across and not through the fracture. Further treatment should therefore be exercise without weight-bearing for another six weeks, when a calliper splint may be carefully fitted so that no undue strain is placed on the neck of the femur. This should be worn for at least six months from the date of fracture.

### *Fractures of the Upper Third.*

The common results of malunion are flexion and abduction of the upper fragment. Here the upper fragment is short, deeply situated, and has strong muscular attachments which determine its position. Its direct control by splintage is not possible. Treatment therefore aims at approximating the lower fragment to alignment with the upper. Strong traction of the limb in the position of abduction, with fixation of the body from which these muscles arise, will allay their spasm and allow approximation and union of the fracture without deformity. This result may be obtained by: 1. The Jones abduction frame. By this means fixed extension in the abducted position is secured while fixation of the spine and hip results in relaxation of the psoas and iliacus muscles. 2. Fixed extension of the lower fragment in flexion and abduction by means of the simple Thomas knee splint. This was the method adopted by Pearson during the war, and in his hands gave excellent results. When the special bed employed by Pearson is not available the position of the pelvis should be stabilised by incorporating it and the sound limb in plaster-of-Paris.

### *Fractures of the Shaft.*

The common deformities resulting from malunion of fractures of the lower two-thirds of the shaft of the femur are: (1) outward angulation at the site of fracture; (2) sagging of the fragments; (3) internal rotation of the limb below the fracture.

The Thomas knee splint has now been recognised as the standard splint for the treatment of these fractures. I will therefore describe its application in detail. The limb having been shaved extensions are applied extending from the ankle to the middle of the thigh. A Thomas splint bent at the level of the knee-joint to an angle of 100°, with a well-fitting ring, is threaded over the foot and limb until the ring impinges on the tuber ischium. While the limb is held by an assistant a double flannel bandage 4 in. wide is fixed to the lateral bars by a clip at the site of fracture. This band should be sufficiently tight to ensure the normal anterior bowing of the femur when the extensions are tied to the end of the splint. Other suspensory bands are applied from the buttock to a hand's breadth above the heel. These should be sufficiently tight to support the limb, but not so tight as to render the band at the site of fracture loose.

We now have fixed extension of the limb, and experience has proved that under this influence muscle spasm relaxes and the fragments are easily guided into correct alignment. If undue pressure of the ring is complained of this may be relieved by utilising body-weight as a traction force. The bottom of the bed is raised 18 in. and the end of the splint tied to a vertical upright fixed to the bed frame. By this means the extension of body-weight is added to the fixed extension already obtained by means of the splint. Reduction of the fracture may be confirmed by X rays without disturbance of the splintage.

As soon as there are clinical signs of union graduated exercises of the knee may be allowed. This may be done while extension is maintained by means of a duplicate of the lower portion of the Thomas knee splint, hinged to the main splint at the level of the knee-joint. The extension and supporting bands are transferred to this, and gradually increasing movement of the knee allowed. At the end of eight weeks, if union feels firm, the splints may be discarded, and physiotherapy employed to restore the musculature and movements of the limb. Weight-bearing without a protective calliper splint should not be allowed until the X rays show definite trabeculation of bone at the site of fracture. In fractures of the lower third of the femur the special tendency to tilting backward of the lower fragment must be guarded against by increasing the degree of flexion of the splint at the knee, while maintaining fixed extension of the limb.

### *Fractures Involving the Knee-joint.*

These include T-shaped fracture of the lower end of the femur, separation of one condyle, &c. Where the nature of the fracture will not allow of the restoration of the normal alignment of the joint surfaces by external splintage operative reduction should be undertaken early. Instability of the joint and deformity on weight-bearing will result unless the normal level of the condyles is re-established.

### *Separation of the Epiphyses of the Lower End of the Femur.*

In children forward displacement of the lower epiphyses of the femur may result from indirect violence, usually forced hyperextension of the knee-joint. Reduction is not difficult. Direct extension is applied to the limb, followed by flexion of the knee-joint. The epiphyses having been reduced the position of 60° flexion of the knee should be maintained for three to four weeks. Gradual extension of the limb may then be allowed, no force being used.

During the war many complicated accessories were added to the Thomas splint. They often added to the comfort of the patient, but the effectiveness of the splint depended on the essential principle of fixed extension of the limb, which ensured length, while any tendency to persistent deviation of one fragment from the line of the other was easily controlled by flannel bands passing as required to the lateral bars.

The *Thomas bed splint* consists of an ovoid ring welded to two lateral bars extending to six or more inches beyond the sole of the foot, and uniting in a U-shaped depression to which the extensions are tied.

The *Calliper splint* is used to enable the patient to bear weight on a limb before complete consolidation of the fracture is established. It may be provided by cutting the lateral bars of the bed splint and bending the ends inwards, so that when these ends are inserted into a socket in the heel of the boot body-weight is still transferred to the tuber ischium, while walking is allowed.

The *Jones hip abduction frame* consists of two bars of iron (3/4 by 3/16 gauge for 20-in. frames), one perfectly straight, and the other abducted at a level with the hip-joint to an angle of 25° to 60°.

A full description of these splints, and several useful hints as to the details of their application, will be found in the text-book on "Orthopædic Surgery,"[1] by Sir Robert Jones and Prof. R. W. Lovett published in 1923.

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[1] London: Oxford Medical Publications.

## Special Articles.

## NATIONAL HEALTH INSURANCE: REPORT OF THE ROYAL COMMISSION.

WE published in THE LANCET of March 6th (p. 510) the most important of the recommendations of the Royal Commission on National Health Insurance. We now furnish some interesting passages from the report. The Commissioners state :—

### *The Fundamental Character of the Scheme.*

We have received very little evidence directed against the scheme as a whole, nor have we any reason to think that there now exists any considerable body of opinion adverse to the principle of national health insurance.

### *The Inequalities of Benefit.*

We received much evidence in criticism of the inequalities of benefit which result from the variations between the valuation surpluses of approved societies and of the confusion alleged to be consequent on the comparative freedom which societies enjoy in selecting and, indeed, in defining the content of additional benefits other than an increase in the rates of the cash benefits. . . . Other witnesses contended vigorously for the maintenance of the present system. . . . Some of those who advanced this claim relied on pledges given when the Bill of 1911 was before Parliament, to the effect that, to meet this difficulty, insured persons should be free to choose their own societies and the societies should have full control of their own surpluses. In this particular sphere, indeed, it became evident that we had to recognise the existence of opposed and apparently irreconcilable opinions held in each case by schools of thought whose views were entitled to respect and consideration.

### *General Satisfaction with the Scheme.*

We can say at once that we are satisfied that the scheme of National Health Insurance has fully justified itself and has, on the whole, been successful in operation. The workers of this country have obtained under it substantial advantages, in particular by securing the title to free medical attention and medicine whenever and as soon as these are required, and by the proportionate diminution, to the extent of the cash benefit granted, of their anxiety as to the loss of wages during illness.

### THE DEVELOPMENT OF THE HEALTH SERVICES.

Medical benefit has been in operation for 13 years; of the other branches of medical service some preceded, others followed its introduction. In all these activities we have found, speaking broadly and with full consciousness of its limitations, such a contribution to the health and well-being of the community that we feel sure that a steady expansion in these services will mark our future social history.

### *Scope of Medical Benefit.*

The effect of the provisions of the Act was that the insured person was entitled to receive from one doctor, and from one doctor only, the whole of "medical benefit" whatever that phrase might mean. In these circumstances it appeared to the legal advisers and to the department that the scope of medical benefit must be construed as limited to services within the competence of the average general practitioner. Further, though the medical lists included a certain number of men with special experience, whose competence in certain directions was therefore above the average, it was felt that if all doctors were to receive the same rate of remuneration, as practical considerations were found to require, a uniform obligation and a uniform content of service were implied; and that it would not be equitable to require one man, because he happened to possess some special skill, to render a wider range of service than was required from the majority of his fellow practitioners engaged under the insurance contract.

Though this limitation of the service has been from time to time commented upon and though on all sides a fuller conception of medical benefit has been urged upon us by witnesses, no attempt to challenge it in the courts has ever been made during the 13 years of its operation. We may fairly assume, therefore, that it is valid on legal grounds and we recognise the general and administrative reasons for the restriction in the regulations.

### *The Value of Medical Benefit.*

As to the quality of the insurance medical service we will restrict ourselves to a citation of some representative extracts from the evidence, prefacing these quotations with the remark that the general acceptance of the system during the last 13 years, the absence of any substantial volume of criticism of it apart from the question of scope already referred to, and the wide demand for its extension, are in themselves evidence of a favourable kind.

### *Private and Insurance Service.*

The assertion that doctors are comparatively inattentive to their insurance patients—a statement more common in unrestrained conversation and in letters to the press than in formal evidence—is peculiarly difficult to test, inasmuch as, in the nature of things, it almost necessarily rests on vague impressions or sporadic and unrepresentative incidents. It is, perhaps, proper to observe that in a service comprising 15,000 doctors it is impossible to postulate that all will, at all times and in all circumstances, maintain a superlative standard of efficiency and care. It must needs that offences come. The medical profession, like every other craft and calling, can claim no immunity from the intrusion of undesirable and unworthy elements. Nor does this imply any disrespect towards an honourable profession; it is merely an acknowledgment of their common humanity. Isolated cases of negligence and carelessness, therefore, prove nothing; such occur in private practice also.

We can say confidently that adverse forecasts have been falsified and that medical benefit has proved in practice a successful and most valued factor in the advancement of the health of the nation.

### *Ophthalmic Benefit.*

It is not within our province to consider the arguments for or against the prohibition of the testing of eye-sight by persons other than medical practitioners. But as to the provision to be made for insured persons as part of the Health Insurance Scheme, we consider that a satisfactory solution could be found in connexion with a proposal which we make elsewhere directed to the provision of a specialist medical service as part of medical benefit. Such a specialist service would include ophthalmic specialists whose services would be at the disposal of insured persons requiring them, and the function of the optician would thus, in the case of insured persons, be limited to the making-up of the spectacles prescribed by the eye-specialist.

### *The Local Medical and Panel Committees.*

These bodies have proved a valuable element in the medical side of the insurance scheme. The principle of having in each area a representative body of medical men, to whom professional questions are referred and by whom many of the administrative problems affecting the insurance practitioners are considered, has evidently been acceptable to both lay and professional opinion. . . . Under such an extension of medical benefit as we recommend, and even more so in any larger developments of the future, the two committees will necessarily tend to coalesce and become, if they are continued, the single expression of professional wisdom in the area. We do not doubt that they will be continued in any immediate developments, and equally we see in them the hint of a local professional committee working side by side with the single local health authority in all parts of the country.

### *A General Public Service—ultimately.*

We are of opinion that the difficulties of a composite support to a completed medical service from insurance funds as well as from grants and rates would be so considerable alike in their financial, administrative, and social aspects that some more practical solution must be sought. In particular we feel sure that the wider the scope of these services, the more difficult will it be to retain the insurance principle. The ultimate solution will lie, we think, in the direction of divorcing the medical service entirely from the insurance system and recognising it along with all the other public health activities as a service to be supported from the general public funds. Consideration would have to be given to the question of the classes of society for whom the service would be available and whether it should be so available on a free basis or with payments by insurance or otherwise. These, however, are problems which need not—perhaps cannot—be solved now, but may be fitly left over for those who, unlike us, will approach at close range to the great question of the public health service of the future.

### THE FINANCIAL BURDEN OF THE EXISTING SOCIAL SERVICES.

We feel that there may come a time, and that in fact there has come a time when the State may justifiably turn from searching its conscience to exploring its purse, and that in connexion with our present reference we are entitled to direct attention to this grave problem, and to frame our recommendations in the light—or the darkness—of the economic condition of the nation. We therefore make the definite recommendation that only such extensions or modifications as involve no expenditure or can be met within the present financial resources of the scheme, should be considered as immediately practicable.

### *Continuation of the Approved Society System Recommended.*

We do not ourselves think that the best interests either of the State or of the insured population would be served by a vast amalgamation of all the resources of the scheme in a common fund administered from the centre, and for the reason given we are satisfied that such an amalgamation would create as much discontent as it would allay. From this point of view, therefore, we have come to the conclusion that a system of self-governing bodies is to be preferred and should be retained.

### *The Problem of In-Patient Treatment in Hospitals.*

We think that the present arrangements, under which approved societies may give financial assistance to the hospitals under their schemes of additional benefits or by way of donations under Section 26 of the Act (with a certain modification in the latter which we recommend), may be continued, but that no general provision of hospital treatment can be at present contemplated within the insurance scheme. We fully appreciate the great work the hospitals are doing alike for the insured and the uninsured, and we do not underrate their financial difficulties. But both on grounds of finance and policy we accept the view of the Ministry of Health that an extension of this nature must be left over for future consideration.

### *Reactions on Efficiency of General Practitioners.*

In a system under which specialist services and general practitioner services were welded into one scheme, the conditions of general practice would be completely changed. The mere obligation to furnish the expert with a statement of the case would have a valuable and educational influence in constraining the practitioner to give definiteness to his ideas. When he had to prepare a statement to come under the critical eye of the expert he would, by that mere fact, become alive to defects in his conduct of the case, which he had not previously realised. The indirect benefit resulting from such a requirement has, we are informed, already been seen in the work of the regional medical staff. Again, the specialist's report will often reveal to the practitioner points in diagnosis or treatment which he might have overlooked. It will thus add to his knowledge by enabling him to assimilate the expert view of his cases as they come along. In all these ways the provision of a specialist service would operate as a most valuable form of post-graduate instruction and would probably be gratefully welcomed by the isolated general practitioner. The educational benefits so resulting would not be confined to the insured persons, but would be extended to the whole range of general practice.

### *Estimate of Cost of Provision for Persons able to Travel.*

The estimate has been based upon inquiries made by the regional medical officers and on statistics published by certain hospitals. The conclusion of the Ministry is that for the insured population of 13½ millions in England and Wales the cost would not, on the lowest assumptions as to number of persons referred and other factors of cost, fall below £487,000, and would be unlikely to exceed £840,000 per annum. This is, of course, a wide difference. It is mainly due to different assumptions as to the proportion of the insured population that would be referred to the specialist.

### *Estimate of Cost of Home Service.*

On the basis of such information as is at present available the Ministry have estimated that the cost of domiciliary consultant services would probably not exceed £250,000. We recommend that the working of the arrangements for the provision of a domiciliary consultant service should be closely watched by the central department, particularly in the early stages, to ensure that the system is not resorted to by lax or negligent practitioners in cases where no real doubt arises in regard either to diagnosis or treatment.

### *General Summary of Cost.*

The maximum annual cost of a scheme of expert out-patient services such as we have outlined, including all the work for a population of 13,500,000, is as follows:—

| | |
|---|---|
| Specialist services .. .. .. | £840,000 |
| Bedside consultations .. .. | £250,000 |
| Laboratory aids .. .. .. | £100,000 |
| Total .. .. | £1,200,000 |

(This is for England and Wales, but not Scotland.)

### *Dental Treatment.*

We have come to the conclusion that no change should be recommended at present in the main provisions for dental treatment. A complete dental service would be eminently desirable. But it would cost about £4½ millions a year, or 1½*d.* on the contribution. A partial service has, as we have indicated, many defects and difficulties, medical as well as administrative. Any reasonable partial service would cost about £2½ millions a year.

### *A Regional Dental Staff.*

As the activities of the regional dental service would in very considerable measure tend to protect the expenditure of the approved societies on additional benefits, and as the greater efficiency of the treatment would in the long run tend to conserve the benefit funds, we think it only fair that a substantial proportion of the cost of the regional dental staff, if it is established, should, as in the case of the regional medical staff, be borne by the approved societies concerned.

### *Transfer of Powers and Duties to Local Authorities.*

The conclusion we come to is that insurance committees should be abolished, and that their work, very much in its present form, pending any radical remodelling and unification of the health services, should be handed over to committees of the appropriate local authorities with possibly a coöpted element. We do not enter into any details as to what is the appropriate local authority, as this question is dependent on the results of the deliberations of the Royal Commission on Local Government now sitting. Until the lines on which the general framework of the local government of the country is to be remodelled are known, any specific recommendations would be useless. If our recommendation in this matter is adopted, we think it may safely be assumed that provision would be made for the absorption of the staffs of the present insurance committees.

### *The Complaints Machinery.*

On questions of procedure for dealing with complaints against practitioners, the British Medical Association made certain suggestions for the alteration of the regulations, among others, that an appeal to the courts should be possible not only on the ground of improper procedure as at present, but on the ground that the penalty inflicted was out of proportion to the offence; and that in the case of proposed removal from the service the practitioner should have the right of appeal to a duly constituted central professional committee, and that the Minister of Health, in cases where this right was exercised, should not be able to remove the practitioner from the service unless the central professional committee advised this course. . . .

The former proposal involves placing upon the courts the responsibility for deciding questions of a kind which, in our opinion, can be more appropriately decided by a Minister who is answerable to Parliament for the manner in which he exercises his discretion. The latter proposal we are also unable to accept. We appreciate that removal from the medical list may be, and usually is, a very severe penalty, but it has to be remembered that the ground of removal is that the retention of the practitioner would be prejudicial to the efficiency of the medical service of the insured persons, and it would, in our judgment, be contrary to sound constitutional practice that the Minister's responsibility to Parliament for the maintenance of an efficient service should be delegated to an outside body, whether professional or otherwise.

With regard to questions relating to the propriety of any particular method or line of treatment, we agree that where it appears that a practitioner has exercised his judgment to the best of his ability, his professional skill having been, in the words of one of the witnesses, "carefully and properly given to the patient," the Minister should not go into the question whether the line of treatment which was adopted is in accordance with any particular professional doctrine as to what is or is not the best line of treatment in such cases. From inquiries that we have thought it necessary to make we gather that the Minister accepts this view and would not regard it as part of his duty, when considering, as the regulations require, whether a proper standard of treatment has been given, to enter into questions on which professional opinion might differ as to the efficacy of particular methods of diagnosis or treatment. This, however, is subject to the qualification stated, that the practitioner has, in fact, exercised his professional skill with reasonable care, and this appears to be a matter of which cognisance must be taken in the exercise of the Minister's disciplinary powers. . . .

As to inquiry cases, if the Minister decides that the facts established by the Inquiry Committee do not warrant removal, but do appear to call for some lesser penalty, a new issue arises and considerations may properly be taken into account which were not relevant to the major issue of removal from the list. For this reason we think that before any penalty other than removal is imposed, the doctor should be given an opportunity of a further hearing.

### *Employed Contributors: The Income Limit.*

On the question of the income limit for insurability, we have carefully considered the proposal of the British Medical Association, that such a limit should be fixed for manual as well as non-manual workers. We are definitely of opinion that such a change would be undesirable. We think that the present principle which draws a firm distinction between manual and non-manual labour beyond a certain point is sound, inasmuch as the manual worker, whatever his earnings at any moment may be, is generally subject to economic conditions which render an insurance provision highly desirable. . . .

The only practicable method of dealing with this administrative difficulty would be to determine prospectively for a certain period an insured person's title to benefit by reference to his financial position retrospectively, and it hardly requires to be pointed out that the adoption of such a solution might have the effect, and indeed would not infrequently have the effect, of granting an insured person medical benefit while his earnings were high, and withdrawing it in the subsequent period when his earnings might be reduced. This result would curiously defeat the whole purpose of the suggestion.

### *Proposed New Additional Benefits.*

We have been informed by several witnesses that there is a pressing demand for the inclusion of payments for massage and electrical treatment as an additional benefit, and we have received evidence which convinces us that the provision of this benefit would materially assist in the promotion of earlier recovery in the case of persons suffering from certain types of incapacity. We would refer particularly to the evidence given before us by Dr. Smith Whitaker, and that given on behalf of the Chartered Society of Massage and Medical Gymnastics. We recommend, therefore, that this benefit should be added to the list.

### *Inquiries into Excessive Sickness.*

We have come to the conclusion that the penal provisions directed against the local authority or the employer are useless as a means to further the end which the section has in view and that they should accordingly be eliminated. But we think that the bodies responsible for the local administration of medical benefit to insured persons should be given power to institute inquiry into cases of excessive sickness brought to their notice, and that for this purpose they should have access to the medical records collected under the Health Insurance Scheme.

### *Medical Institutions.*

After careful consideration of all the evidence before us we think that this method of providing medical attention and treatment is an anomalous feature in a scheme of which the cardinal principle is a contract between insurance committees on the one hand and individual independent doctors on the other, and that it introduces lay control over professional men in an undesirable form. On the other hand, we consider it necessary to have regard to the recognition by Parliament of these institutions at the time when the scheme was introduced, and to the fact that there is no evidence of failure sufficient to justify a recommendation on our part that the recognition of the institutions for the purposes specified should now be withdrawn. The original Act restricted recognition to those institutions then in existence, clearly designing that this method of providing medical benefit should be exceptional and should be regarded as an unavoidable inheritance from the past.

### *Contracting Out.*

We recommend that Section 24 (3) of the Act should be amended so as to debar any insurance committee, or local authority succeeding to its powers, from sanctioning the use of any organisation for the purpose of "collective own arrangements," and to provide that the provisions of the subsection shall not be applied otherwise than to individual insured persons. We wish, however, to make it clear that our recommendation does not apply to cases in which nurses or other resident employees of hospitals normally receive medical treatment and attendance from the medical staffs of the hospitals in accordance with the terms of their employment.

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VICTORIA HOSPITAL, KEIGHLEY.—Last week Princess Mary opened a new electro-medical block. The extension comprises a radiographic room, treatment room, dark room for developing plates, dressing cubicles, offices for records, and a doctor's room. The Princess took a radiogram of the matron's hand and saw it developed.

# PENSIONS FOR HOSPITAL OFFICERS AND NURSES.

## I.

AN explanation of the draft scheme of pensions for hospital officers and nurses will be helpful to the many medical men who are interested, directly or indirectly, in the subject. The outline of the scheme which follows contains little detailed criticism, especially of the financial aspects; a subsequent section deals with these, although certain comments will be found here, it being impossible even to sketch the outline without recognising the grave difficulties of finance involved. For these include the serious liability to be suddenly shouldered by the hospitals, and the problems presented by the attempt to adapt a scheme, on the one hand, to existing officials of mature age and long service, and, on the other hand, to that often transitory figure in hospital life, the nursing probationer; "once a nurse always a nurse" is by no means an accurate description of this class, where the actual work often brings disillusionment, or marriage leads to its abandonment.

The scheme represents a great ideal and, even if it prove to be impracticable to build the entire edifice at the outset, it may well be possible, and financially prudent, to erect a substantial wing of the structure to-day, to which extensions may afterwards be made as funds permit. Fundamentally, it is based upon the same lines as those of the now well known and satisfactory Federated Superannuation System for Universities; and rightly so, for in both cases a combined scheme is required for a group of independent institutions forming together a common professional service, within which migration from one institution to another is fairly frequent. An insurance policy, whether with or without death benefits—i.e., an endowment assurance or a deferred annuity—is to be taken out for each person concerned in order to provide the ultimate pension, such policy being, as it were, attached to the individual and clinging to him, within certain limitations, whether he (including she) move from one institution within the scheme to another also within it, or whether he leave hospital service altogether; such policies will be increased *pari passu* as salaries increase with the lapse of time, and are to be paid for by annual premiums, these to be effected with one or other of certain chosen insurance offices which will be placed upon a panel, selection to follow in due course. The amount of annual premium payable is to be 15 per cent. of the salary and emoluments (which latter term roughly means the money value of board and lodging) of the individual, and it is proposed that two-thirds of this—that is to say 10 per cent.—shall be paid by the hospital, and one-third, 5 per cent., by the individual.

Officers' pension policies are to mature at age 60, so that retirement can take place then, or later, in accordance with the regulations of the hospital concerned. Premiums cease in any event on attainment of that age, but, if retirement be deferred, can be accumulated thereafter at compound interest, the eventual pension thus, of course, being augmented. In the case of nurses, the scheme fixes the retiring age at 55.

### *Hospital Officers.*

There are certain salary limits suggested. Dealing first with the officers, it is proposed that where salary and emoluments are below £100, the officer should be ineligible; where between £100 and £160, that entry should be optional; and where over £160, compulsory, so far as all future entrants into hospital service are concerned. A maximum limit would doubtless have to be agreed in practice, so that it might be possible for hospitals to give substantial increases in salary to senior officers late in life without necessarily forcing up the pension scale to an uneconomic figure. When an officer leaves one hospital for another under the scheme, or not, he takes his policy with him; in other words, he takes the accumulation, not only of his own contributions, but that of the hospital's contributions; it is held that, in the long run, this interchangeability will result in a roughly equitable distribution, and that hospitals will gain in some cases what they lose in others. It may be so, but it might well prove that those hospitals which train their personnel best would lose more than they would gain by this rule, valued employees passing with inconvenient frequency to other institutions.

Officers leaving hospital service altogether within five years of joining would only take the benefit of their own contributions, but any so leaving after five years' service would take not only their own, but the whole of the hospital's contributions, subject only to the institution having some voice as to the way in which the total contributions should be applied so as to benefit the individual most suitably. A fundamental theory of the drafted scheme emerges—that the underlying principle should be to regard the hospital's contribution towards the ultimate pay as being in the nature of deferred pay, fairly earned by the officer year by year. Once grant that, and his right to take such contributions with him can be granted also; but, in that case, the scheme must be admitted as involving a definite increase in the effective salary of every officer, which in turn is an increase in the hospitals' working expenses, and must be fairly faced as such. That aspect of the situation will be discussed in the next article, when the financial side of the whole scheme will be dealt with; for the moment, the recital of the salient points of the scheme claims attention.

### *The Nursing Staff.*

Turning to the nursing staff, the scheme recognises that, during the first years of employment, nurses are, in part at least, only learners—a natural line of cleavage which, in a large view, runs through the whole of hospital service and far beyond the limits of the nursing staff; the difference between learner and teacher is all important when we have to consider what may be, in equity, the onus upon the hospital to contribute to the ultimate pensions in individual cases. It is therefore proposed that, in the case of members of the nursing staff, the contributions both of the hospital and of the nurse in respect of the service rendered during this training period should not be used to procure a policy, but should be held, as it were, in suspense. They are to be placed on deposit during the training period at compound interest; thereafter, when the training period is over, the amount thus standing to the nurse's credit would be used to take out the usual policy, any balance over and above the 15 per cent. basis being used as a single premium to increase the benefits. It is an obvious comment here to say that it is sanguine to assume that probationers with a salary of, say, £25 a year, will readily part with 5 per cent. of their total salary and emoluments, say, £3 15*s.* a year, in this way. A young woman may be theoretically receiving annually £75, in "meal and malt," but she does not regard the £50 value of her board and lodging as money, but looks rather at her actual cash wage, which, indeed, is all she has to spend. She will consider £3 15*s.* out of her £25 a very big bite.

Those, however, who cease altogether to follow the nursing profession within five years of entry as probationers would take away their own contributions, the hospital receiving back from the insurance office those which had come from its coffers, and the sum, if small, representing compulsory savings would be of use to most young women with little money to spend. The hospital is more concerned with the fact that nurses leaving the profession altogether after that five-year period had expired would take with them the full accrued benefit of all the contributions, hospital's and individual's, subject only to the fact that it is suggested that some nursing committee or body of that kind should prescribe the form in which it would be in the best interests of the individual that these benefits should be taken—for instance, whether in cash or in the form of a modified pension to the extent which the past payments would suffice to provide. The important and serious fact, however, from the hospital's point of view, is that the institution would in all those cases lose its own money. And the warning note should be sounded that the very existence of a claim to a sum that could be regarded as a small dowry may tend to increase the number of those who may drop out of hospital life. Some nurses who would normally have left earlier, according to their own inclination, and, indeed, perhaps to the hospital's advantage, may be moved to hang on until the end of the fifth year; others, though efficient, and perhaps happy in their calling, might find these accumulations an inducement to leave, and the marriage rate would be increased, if to the advantage of the State certainly to the disadvantage of the hospitals.

### *The Position of Existing Officers and Nurses.*

The position of existing officers and nurses is vitally affected by two matters—one, that of future contributions from those entering in mid-career and later life, and two, that of the treatment received in respect of past service. The scheme suggests that the future contributions in respect of an existing officer or nurse should be the same percentage as for new entrants, the pension so purchased being, of course, smaller in accordance with nearness to the age of retirement. The argument employed is that such contributions, so far as they went, "would relieve the hospital of part of the liability to provide for the pension when it became due." The very words used predicate that a definite liability already exists, and, if that be conceded, it seems not unlikely that some existing officers and nurses may ask shrewdly why they should now begin to contribute annually out of their income in order to help the hospital to provide pensions which, by admission, would have had to be provided for them anyhow.

Unquestionably it would be far too expensive to attempt to meet the difficulty in advance by paying over to the insurance offices lump sums equivalent to the contributions which would have been made year by year had the scheme existed throughout those periods of past service: but it has been suggested that, as all those existing officers who did join the scheme would be paying one-third of the cost of the pension in respect of their future service, the hospitals should guarantee that the actual pensions eventually should never be less than would have been granted had the scheme not existed, a guarantee to be given not only to those who join, but to those now above the age limit. This, again, seems a suggestion somewhat vaguely sketched, for it would then be necessary in each hospital to set down in black and white what that hypothetical pension would have been; and, in taking such a very serious step as guaranteeing a definite annuity at a definite date, in place of a shadowy recognition of a moral obligation to provide something some day, the hospitals would be compelled to count the cost carefully lest they should promise more than they can fulfil.

When, in the sequel, some actual figures are given, not only will the cost to the individuals be shown, but some measure of the heavy burden which the full scheme would surely place upon the hospitals. All who have the interests of the hospitals at heart will see that an effort should be made to offer constructive rather than destructive criticisms with regard to a development of hospital service which in some form or another is overdue, and the scheme may still fortunately be considered as in the Bill stage rather than in that of the completed Act. That something must be done to improve the status of the nursing profession is a general admission; that something should be done to give a greater feeling of security with regard to their provision for old age to that hard-working class, the permanent hospital officials, is felt to be desirable; and that something may be done to inaugurate a better state of things is admissible. But there is always that insistent question of ways and means, and it is not generally possible to carry out a whole ideal programme at the start.

(*To be continued.*)

## MEDICINE AND THE LAW.

### *Meat in Open Windows.*

AN educative value attaches to the recent prosecution of some Deptford shop-keepers for failing to protect from possible contamination meat exposed for sale. According to a report in the *Times*, the terms of the summons taken out by the borough council charged them with neglecting to take steps to guard against the contamination by flies of meat exposed for sale, and to place the meat so as to prevent mud, filth, or other contaminating substance being splashed or blown thereon. According to the evidence of the medical officer of health, in one case the meat was exposed on a stall in the street, in another bacon was unprotected in a shop window, in a third bacon was lying behind an open window "without gauze or covering as advised by the Ministry of Health." The witness said he required closed windows and a gauze covering. For the defence, it was, of course, pleaded that the covering of meat at all times was impracticable. The magistrate's decision was that the meat was exposed to mud-splashing, but that there was no proof of actual splashing. The ideal, he said, was to be found in the medical officer's recommendation, which was not enforceable at present. It was not necessary to have glass windows. A technical offence had been committed; he therefore imposed a nominal penalty of £1 with an order for two guineas costs. From the public point of view it is valuable that shop-keepers should be set a high standard, but it is not satisfactory that prosecutions should be undertaken to enforce a standard which rests only on advice from the Ministry of Health or on recommendations from the medical officer. The law should be made plain, and it should be known as widely as possible, whether it depends upon a Public General Act, a Local Act, a regulation of the Ministry, or a by-law of the local authority. While the report of the case will educate both the shop-keeper and the public as to the danger of contamination, it seems to leave the legal position remarkably indefinite.

### *Eggs: Description as New Laid.*

Prosecutions under our sale of food legislation for the offence of selling food to the prejudice of the purchaser and "not of the nature, substance, and quality demanded" raise issues which are usually matters of simple fact. In a Norfolk case, heard at the beginning of this year and reported in the *Analyst*, the facts were that an egg-dealer bought 18 eggs of which some had admittedly been preserved in water-glass. There was a question whether they had been sold as "new laid," and, if so, whether an egg which had been preserved in water-glass had necessarily lost its nature and substance. The prosecutor's evidence was that, when the eggs were offered him, he remarked that they looked like water-glass, but that he was reassured by the seller's agent and then said he would take them as new laid, and that, if they were not new laid, the seller would hear more about it. This was construed as a demand for new laid eggs, and it was clear that the articles were not at any rate of the quality demanded. The magistrates unanimously convicted, and a fine of £5 was imposed. The defence that preservation of eggs is not adulteration was not particularly relevant, nor was the mention of the Sale of Food Order, 1921. That Order refers to eggs imported into the United Kingdom, and forbids their sale (wholesale or retail) "as fresh eggs or new laid eggs or under any description of which the words 'fresh' or 'new laid' form part" unless the description also includes the word "imported" or a word or words disclosing the country of origin. The Order, it may be added, is a survival of the days of food control. Parts I. (sale of bread) and III. (labelling of imported produce) of it are annually continued by the Expiring Laws Continuance Act in default of a properly considered permanent effort of legislation. As the country is unenthusiastic over the continuance of these relics of D.O.R.A. that effort might now be made.

## IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *The Medical Register.*

THE *Irish Times* published last week a document stated to contain the proposals put before the Free State Government on behalf of the medical profession with a view of settling the question of the Medical Register. The document was accompanied by a series of notes purporting to explain its history and meaning. On the following day the same journal printed a letter from Mr. R. C. B. Maunsell, President of the Royal College of Surgeons in Ireland, in which he stated that the document published by the *Irish Times* was not that submitted to the Government, but a verbatim copy of certain rough notes brought by Mr. Maunsell himself before the medical committee The paper was confidential and had only been in the possession of some eight or ten persons. In Mr. Maunsell's opinion its publication was likely to hamper the negotiations between the Government and the medical profession. It is unfortunate that some one should have been so careless or so mischievous as to allow a confidential document to reach the press. Intrinsically the document is of interest since, as Mr. Maunsell admits, it forms the basis of the proposals submitted to the Government. It would be unfair to discuss its features in detail, but the underlying principles are that: (1) The General Council should not be disturbed in its present activities; (2) a Council and a Register for the Free State should be established; (3) any citizen of the Free State wishing to practise therein must be registered in the Free State Register; (4) any person not a citizen of the Free State wishing to practise therein must be registered either on the Free State Register or on the General Register. It may be agreed that these proposals seem to meet the demand of the Free State Government for an independent Register, and at the same time to protect the interests of the Irish medical schools.

### *Dinner of the Royal College of Surgeons in Ireland.*

The Charter Day dinner of the Royal College of Surgeons in Ireland was held last Saturday evening in the hall of the College, the President, Mr. R. C. B. Maunsell, in the chair. His Excellency the Governor-General was the principal guest, and over a hundred sat down to dinner. In addition to the President and the Governor-General, among the speakers were Lord Glenavy, Sir Thomas Myles, the Chief Justice, the President of the Royal College of Physicians, and the President of University College, Dublin.

### *King's Professorship of Materia Medica and Pharmacy.*

The vacancy in the King's Professorship of Materia Medica and Pharmacy in the School of Physic in Ireland, left by the appointment of Dr. T. G. Moorhead to the Regius Professorship of Physic, has been filled by the election of Dr. Robert J. Rowlette, F.R.C.P.I., who has been Professor of Materia Medica and Pharmacology in the School of the Royal College of Surgeons in Ireland since 1921.

### *Honorary Degree at Dublin University.*

The Senate of Dublin University has passed a grace to confer the honorary degree of M.Ch. on Sir Berkeley Moynihan.

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THE LATE DR. A. LINDSAY.—For the last five years Dr. Alexander Lindsay, who died on Feb. 25th, had been living in retirement at Cricklewood. He was born 66 years ago in Ramelton, Donegal, and was educated at Queen's College, Belfast, and at Trinity College, Dublin, where he graduated as M.D. R.U.I. in 1883. Soon afterwards he went into practice at Burslem, Stafford, where he built up a considerable practice. Later he moved to Leyton, and again, some 17 years ago, to Kensal Green, where he remained at work until 1910. Wherever he went he left memories of his kindly personality. Dr. Lindsay married the daughter of Mr. Frederick Coates, of Hoddesdon, Herts, who died in 1913, leaving no children.

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## Correspondence.

"Audi alteram partem."

### EMETINE IN THE TREATMENT OF HEPATIC ABSCESS.

*To the Editor of* THE LANCET.

SIR,—Further to my letter on this subject which appeared in your issue of Jan. 10th, I would like to add some of the arguments on which I base my conviction that emetine alone is sufficient to cure cases of hepatic abscess.

1. *Pathology.*—In the first place had the condition been called anything but an abscess and had ipecacuanha been properly appreciated as a therapeutic agent, it is very doubtful if surgical intervention would ever have reached its recent, but I trust fading, importance in these cases. In its origin the "abscess" is secondary to bowel infection; it is not circumscribed; its inner surface is extremely irregular; its contents are sterile; the causative organism is in the tissues and, in fact, from every point of view it is exactly analogous to a gumma. People obsessed with the pyogenic abscess idea find it difficult to believe that the absorption of the contents of "hepatic abscesses," large and small, is possible. A little reflection should lighten this difficulty. For instance, it would be interesting to compare the cross-section of the myriad lymphatics of the liver with that of the aspirating needle.

2. *Diagnosis.*—It will be a sad day indeed for tropical practitioners if the dictum is accepted that aspiration is essential before the diagnosis of hepatic abscess can be made. I know that such a measure need not be necessary, as I have published the record of a case in which, though unproved by aspiration, the abscess ruptured two hours after treatment was begun. Would Dr. Manson-Bahr also require that a *psoas abscess*, another analogous condition, should be aspirated before the diagnosis could be made, and if not aspirated would he classify the case as unconvincing if and when the contents were absorbed in the course of treatment at, e.g., the Alton Cripples' Hospital?

3. *Treatment.*—I maintain that aspiration with evacuation of an hepatic abscess introduces a definitely deleterious factor and upsets all the natural processes of elimination. The direction of flow of the defence forces, so long as the amœbæ are alive, is centripetal, but once the amœbæ are killed the direction becomes centrifugal unless the contents are forcibly evacuated. In this case the flow remains centripetal because nature abhors a vacuum.

I have demonstrated, and many cases from the literature confirm my statement, that emetine alone is sufficient to cure cases of liver abscess. Aspiration, though a handicap, does not ultimately prevent cure, but once this operation is performed the result, even though it is happy in a large number of cases, is not obtained in the quickest, the most certain, and the most humane way possible. Finally, it is well known that abscesses, especially in the earlier stages, are often multiple, up to 25 per cent. has been stated, so that it is fair to ask if anyone could possibly be sure that all the abscesses had been reached and evacuated by the aspirator, and if not, as often occurs, cure results, is it not perfectly obvious that the abscess, which escaped the needle, has recovered, thanks to the emetine, which even the most surgically minded uses in association with his aspirating needle. If this is so, why put the patient to the pain and inconvenience of aspiration? Why not leave all the duty to nature and emetine.

In conclusion I would add two further points which my experience has taught me: (1) That emetine gr. 1 for 12 consecutive days is not the best method of giving the drug in liver abscess cases or for dysentery.

(2) That the larger the abscess and the longer it has lasted the easier, relatively, it is to cure with emetine only. I am, Sir, yours faithfully,

V. S. Hodson.

London, W., March 19th, 1926.

⁂ We have submitted Dr. Hodson's letter to Dr. Manson-Bahr, who replies as follows:—

"Dr. Hodson is correct in stating that many observers agree with him that emetine therapy acts beneficially in liver abscess and that it has sometimes appeared to have rendered operative interference unnecessary, but it is extremely difficult, as I think most men who have had sufficient experience will agree, to distinguish actual formation of amœbic pus from an amœbic hepatitis, in which invasion of the liver tissue by entamœbæ without pus formation has taken place. Aspiration is the only method capable of settling this question. The actual performance of aspiration is a simple matter and is certainly not attended with any more risk than the tapping of a pleural cavity; it is certainly a method equal in its diagnostic importance and therapeutic effect.

"The question at stake is the size of the abscess or abscesses and the results of the absorption of such a large amount of toxic matter on the individual. If a grave degree of toxæmia is present, as is usually the case, the sooner the pus is evacuated the better for the patient. It seems to me a very untherapeutic attitude to force an already toxic subject to absorb a large amount of dead tissue from his liver through his lymphatic channels, when a much more rapid and pleasant method is at hand. A liver abscess may be a comparatively trivial or it may be a very serious disease. When there has been formation of a large amount of pus (four pints or more) respiration is severely hampered and displacement, with consequent embarrassment, of important organs, such as the heart, may take place (as in a very serious case under my care at the present time).

"Surely Dr. Hodson does not credit emetine with such miraculous qualities that a few grains will suffice to dispel several pints of dead tissue and thereby relieve pressure on vital organs, nor can it possibly lessen the amount of septic absorption which is taking place. The cases quoted in my original paper with Dr. Morris (The Lancet, Jan. 9th) are two specific instances where, firstly, emetine therapy had failed to prevent the recurrence of an abscess, and, secondly, had failed to prevent the re-accumulation of pus in an abscess which had already been drained.

"It is probably unwise to dogmatise at present on the action of emetine in abscess of the liver. Other drugs act in a similar mysterious manner; quinine does not cure *every* case of malaria, nor salvarsan every case of syphilis; but to assert that the larger the abscess and the longer it has lasted the easier it is to cure with emetine, appears to be in direct contradiction to clinical experience."

## THE LOCALISATION OF SMALL FOREIGN BODIES: A CASE.

*To the Editor of* The Lancet.

Sir,—A few months ago I was asked by a young man to remove a glass splinter from his heel. He informed me that he had trodden on some broken glass about two years previously, all of which had been removed at the time save this small fragment. That a subsequent unsuccessful attempt at removal had occupied two hours under general anæsthesia, and that, since the splinter gave him pain and disability, he wished, if possible, to have it removed before proceeding to East Africa.

The following method of localisation proved so helpful on that occasion, and has been so since in the case of embedded needles, that I venture to record the procedure. Three marks were made with a skin pencil from side to side, encircling the heel. Over these marks were placed three pieces of fine silver wire, fixed in position with adhesive strapping. A stereoscopic radiograph was then taken. This localised the fragment relatively to the skin pencil marks. The skin of the foot was now prepared for operation by the iodine method and, using local anæsthesia, two hypodermic needles were inserted at right angles to each other, down to where the fragment was judged to lie in relation to the pencil marks. The foot was now wrapped in a sterile towel and another stereoscopic radiograph taken. This showed the position of the fragment relatively to the hypodermic needles, the vertical one having passed just anterior to it and the horizontal one immediately above it; it lay in the angle between them. After a further injection of local anæsthetic I cut down upon the horizontal needle and had no difficulty in touching and removing the glass splinter, in spite of the facts that its small size (about 1 × 1 × 5 mm.) and transparency made it invisible until it was actually removed, and that no tourniquet was used. The little operation occupied about ten minutes. This contrasts so markedly with the prolonged search one has so frequently had to make for comparatively large and visible foreign bodies and the necessary dissection among tendons, with proportionate risk of infection, that the somewhat lengthy procedure for localisation seems to me abundantly justified. It is true it merely transfers the labour and time from the operating theatre to the X ray room, but to the considerable advantage of the patient.

These few points—which it would be impertinent to suggest to the expert radiographer—may be of help to an amateur like myself. 1. While the position of the limb is of little or no importance, the long axis of the films should be exactly at right angles to the stereoscopic shift of the tube in order to obtain the maximum stereoscopic effect. 2. The stereoscopic shift should be parallel to one of the needles, preferably the one it is intended to cut down upon. This needle will then give the best impression of the depth and thus serve for localisation in two dimensions. 3. It is hardly necessary to add that the incision should be so placed as to lay bare only a portion of the "guide" needles in order that both may remain in their original positions until the foreign body is actually removed. 4. It is an immense advantage to be able to look at the stereoscope, after one is prepared for operating, immediately before making the incision.

I am, Sir, yours faithfully,

Martin Button, F.R.C.S. Eng. & Edin.

Rye, March 12th, 1926.

## A CLINIC OF MANIPULATIVE SURGERY.

*To the Editor of* The Lancet.

Sir,—I wish to make a preliminary announcement concerning a clinic of manipulative surgery instituted in London in response to many requests from medical men and others who feel that some such movement is urgently needed to endeavour to place the matter upon a scientific basis.

The clinic is primarily for the benefit of poorer patients in need of manipulative treatment, and the headquarters are at present at 59, Montagu-square, W. Treatment in the case of the necessitous poor will be gratuitous.

The clinic is held at present on Tuesdays between the hours of 2 and 6 p.m., and it is hoped when its activities are in full swing to arrange classes and demonstrations for practitioners and senior students, who are at all times welcome at the clinic. A scheme is also under consideration for the foundation of an institute for the scientific investigation and modern treatment of injuries and non-tuberculous diseases of joints, of which a further announcement will be made in due course.

I am, Sir, yours faithfully,

A. G. Timbrell Fisher.

59, Montagu-square, London, W. 1, March 22nd, 1926.

## THE MEDICAL REGISTER.

*To the Editor of* THE LANCET.

SIR,—I much regret to find that errors have crept into the figures which appear in Tables D and E in the Medical Register. These tables are now being reprinted, and will be issued in a corrected form to all those to whom official copies of the Register have been sent.—I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar, General Medical Council.

44, Hallam-street, Portland-place, London, W. 1,
March 19th, 1926.

## THE FUNCTIONS OF THE SPLEEN.

*To the Editor of* THE LANCET.

SIR,—Your leading article last week, dealing with my two lectures on the Functions of the Spleen, naturally raises the question: Why did not the view put forward by Gray in 1854, that the spleen was a reservoir for blood, become thenceforward part of the body of accepted knowledge? The answer seems to be in Gray's complete failure to comprehend the mechanism by which this function was carried out. Gray denied that the spleen was contractile, and, as it seems to me, attributed a "connective" function to cells which are really unstriped muscle fibres. In justice to him it must be remembered that he lacked the now familiar methods of differential staining; acetic acid was his principal reagent.

Even if the spleen were not a muscular bag one could conceive of its performing the rôle of a reservoir of blood as the result of nice vasomotor adjustments of relative calibres of splenic artery and splenic vein. The decade between 1850 and 1860 saw, if my memory is correct, the dawn of our present conception of arterial blood pressure, as measured by exact kymographic methods, and also of the conception of vasomotor nerves. These ideas in 1854 were evidently not sufficiently advanced to illuminate Gray's philosophy.

I am, Sir, yours faithfully.

March 22nd, 1926. JOSEPH BARCROFT.

## MEDICAL DEFENCE UNION: A NEW BENEFIT.

*To the Editor of* THE LANCET.

SIR,—The Council of the Medical Defence Union has given careful consideration to the question of affording members of the Union protection when actions are brought against them in consequence of the acts of a locum tenens, who is not himself a member of the Union.

Recognising that a very considerable number of members are anxious to obtain protection in this respect, even if necessary at the cost of an additional premium, the Council has decided that in future it may at its discretion assume responsibility for any claim made upon a member in respect of the act or omission of any registered medical practitioner whilst temporarily employed as locum tenens for such member. In conferring this additional benefit of membership the Council has decided to require no extra payment beyond the ordinary annual subscription.

I am, Sir, yours faithfully,

HERBERT F. WATERHOUSE,
President.
JAMES NEAL,
General Secretary.

49, Bedford-square, London, W.C. 1, March 23rd, 1926.

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DEATH OF DR. W. ARCHER.—Dr. William Archer, who died on March 1st, following a fall, was 50 years of age and was educated at Woodhouse Grove School, Apperley Bridge, and at the Mechanics' Institute at Leeds. He studied medicine at the Yorkshire College, now the University of Leeds, and qualified as L.S.A. Lond. in 1901. After this he worked as assistant in Leeds and at Huddersfield, and was for some years on the medical staff of the Menston Mental Hospital. Early in 1908 he settled in Earby and soon had a large practice. Although he took no part in public life, his private generosity was well known, and he had many friends. Dr. Archer leaves a widow.

# The Services.

## ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub.-Lt. R. A. Pallister to be Surg. Lt.

## ROYAL ARMY MEDICAL CORPS.

### TERRITORIAL ARMY.

Maj. (Prov.) R. O. Ward is confirmed in his rank.

J. Carver to be Lt.

Sanitary Companies.—Capt. A. Davidson resigns his commn. and retains his rank.

### TERRITORIAL ARMY RESERVE OF OFFICERS.

Sanitary Companies.—Capt. R. Cunningham, from the Active List, to be Capt.

## ROYAL AIR FORCE.

G. S. Strachan is granted a short service commission as a Flying Officer, for three years on the active list.

Group Capt. N. J. Roche is placed on the retired list at his own request (from half-pay).

## INDIAN MEDICAL SERVICE.

The King has approved the retirement of Col. T. B. Kelly and Lt.-Col. R. P. Wilson.

# Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

*Surgery.*—C. B. Ball, Sheffield; W. O. R. Fischer, Berlin and St. Thomas's Hosp.; W. H. D. Priest, King's Coll. Hosp.; and F. Widlake, Guy's Hosp.

*Medicine.*—W. O. R. Fischer, Berlin and St. Thomas's Hosp.; B. Horwitz, Guy's Hosp.; and E. J. Jones, Middlesex Hosp.

*Forensic Medicine.*—A. C. Hill, Liverpool; H. H. Lakin, Birmingham; I. Rivlin, Middlesex Hosp.; P. H. Row, London Hosp.; and G. H. Woeber, Glasgow and Middlesex Hosp.

*Midwifery.*—G. H. Bickmore, Charing Cross Hosp.; W. O. H. Evans, Bristol; C. F. L. Hassard, McGill; A. C. Hill, Liverpool; W. Johnson and R. D. Mason, St. Mary's Hosp.; and H. Rundstrom, St. George's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: B. Horwitz, R. D. Mason, and G. H. Woeber.

INTERNATIONAL LIFE-SAVING.—Under the presidency of Dr. D. A. Coles, chairman of the British Council of the International Congress for Life-saving and First Aid to the Injured, to be held in Amsterdam from Sept. 7th to 11th next, a meeting was held in the Adams Hall of the Federation of Medical and Allied Services, 12, Stratford-place, London, W., on March 17th. The object of the Council is to harmonise the efforts of societies, firms, and individuals who are interested in life-saving and first aid, and the meeting was convened to help forward the arrangements for British representation in Amsterdam. Among those present were members of various Government departments, including Mr. F. H. Wynne, deputy chief inspector of mines, who has been commissioned by the Government as its representative, members of life-saving and first aid societies, including Mr. S. Osborne, who will represent the British Red Cross, Dr. G. Burnet, chief surgeon to the National Fire Brigade Association, who will represent that body, and Dr. M. L. Dobbie-Bateman, medical officer of Harrods Ltd. The Chairman, pointing out that the watchword of modern scientific medicine is prevention, said that while life-saving may be divided into preventive and curative methods, it might cost only a little care to prevent an accident, but to cure or replace the injured worker might cost hundreds of pounds. The accidents which caused the greatest loss of time and money were those attended with sepsis, and this sequela was generally preventable by cleanliness. It was here that welfare supervisors, whose appointment was, he said, so warmly supported by the Industrial Welfare Society, had proved pre-eminently useful. Mr. Wynne pointed out the economic value of the prevention of mining accidents, and Mr. F. W. Davy, representing the Federation of Medical and Allied Services, said that the Federation's constitution showed the fullest sympathy with the interests of industrial medicine. Mr. D. G. Monteith, speaking for the St. John Ambulance Association, pointed out the advantages of a knowledge of first aid. Mr. W. Henry, of the Royal Life-saving Society, pleaded for a greater active interest on the part of the British Government in congresses of this kind. Dr. Burnet said that the National

Fire Brigade Association would not rest satisfied until every individual fireman was proficient in first aid, and Mr. Osborne expressed the sympathy of the British Red Cross with the movement. Mr. Gaster, of the Illuminating Engineers Society, Dr. Dobbie-Bateman, and Mr. Humphries (Southern Railway) also addressed the meeting. The appointment of the executive committee was confirmed. This consists of Dr. Coles, Dr. Burnet, Colonel Pickard (Safety First Association), Mr. Monteith, and Mr. Osborne. It may be mentioned that the first International Congress of Life-saving was held in Frankfort in 1908, the second in Vienna in 1913, and the third, which should have been held in 1918 but was postponed owing to the war, will be held at Amsterdam this year. The fourth will be held in London, probably in 1928. Scenes purporting to be a wreck at sea and a railway accident will form the basis of practical work at the Amsterdam congress and the subjects for discussion and demonstration will include life-saving on board of air-craft and first-aid in the practice of sport. The hon. secretary of the British Council is Dr. H. S. N. Menko, 2, Grosvenor-gardens, Cricklewood, N.W. 2.

University of Manchester.—At a recent examination the Diploma in Psychological Medicine (Part I.) was conferred on R. B. F. McKail, M.B., Ch.B.

Dr. Robert A. Lyster has been elected president of the Association of County Medical Officers.

Naval Medical Compassionate Fund.—A meeting of the subscribers of this Fund will be held at 11.30 A.M., on April 23rd, at the Medical Department of the Navy, 68, Victoria-street, S.W., to elect six directors of the Fund.

Royal Navy Medical Club.—The annual dinner will take place this year at the Trocadero Restaurant, Piccadilly Circus, London, W., on Thursday, April 22nd, at 7.30 for 8 P.M. Members who wish to be present are asked to inform the hon. secretary at 68, Victoria-street, S.W. 1, not later than April 14th.

Mr. Henry Kimpton announces that he will publish the following books on or about April 1st: "The Principles and Practice of Endocrine Medicine," by Dr. W. N. Berkeley, of New York; "A Descriptive Atlas of Visceral Radiograms," by Mr. A. P. Bertwistle and Dr. E. W. Shenton; "A Handbook of Diseases of the Rectum," by Dr. L. J. Hirschman, of Detroit; and "Modern Methods of Amputation," by Dr. T. G. Orr, of the University of Kansas.

Metropolitan Asylums Board.—At a meeting of the Board on March 6th Dr. J. D. Rolleston and Dr. G. A. Borthwick were appointed medical superintendents in the Board's infectious hospitals service. Dr. Rolleston, who has been senior assistant medical officer at the Grove Hospital, Tooting, since February, 1921, becomes medical superintendent of the Board's Western Hospital. Dr. Borthwick, at present port medical officer and medical inspector of aliens in the health department, Plymouth, will be medical superintendent of the Northern Hospital, Winchmore Hill, in succession to Dr. C. E. Matthews, who will shortly retire.

Fellowship of Medicine and Post-Graduate Medical Association.—On Wednesday, March 31st, at 2 P.M., a special demonstration in clinical surgery will be given by Mr. A. Tudor Edwards at the Westminster Hospital. All members of the Fellowship of Medicine and its general course ticket-holders will be welcome. On Thursday, April 15th, a similar demonstration will be given by Mr. W. E. Tanner at the Prince of Wales's General Hospital, Tottenham. On Tuesday and Thursday, March 30th and April 1st, Dr. G. C. Low and Dr. P. H. Manson-Bahr will give lecture-demonstrations, illustrated by cases, at the London School of Hygiene and Tropical Medicine at 2 P.M. The following courses will be held during April: At St. Peter's Hospital, starting on April 19th and continuing for two weeks, a course consisting of clinical work in the hospital daily and special lectures; a series of four lecture-demonstrations on treatment by electro-therapy, by Dr. C. B. Heald at the Royal Free Hospital at 5.15 P.M. each Wednesday, beginning on April 14th; a special all-day course in proctology at St. Mark's Hospital from April 19th to 24th, including operations, lectures, lecture-demonstrations, and clinical work; a course in general medicine, surgery, and the specialties at the Bolingbroke Hospital, for two weeks starting April 19th; and a special two weeks' course in orthopædics at the Royal National Orthopædic Hospital from April 12th to 24th, when lecture-demonstrations will be given each morning preceded by operations, and the out-patient department will be open to post-graduates every afternoon. Copies of all syllabuses, of the general course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Royal College of Physicians of London.—The College will be closed from Friday, April 2nd, to Wednesday, April 7th, both days inclusive.

Moorfields Eye Hospital.—King Edward's Fund has approved the plans for a £10,000 extension; only 25 per cent. of the money has yet been obtained.

University of Sheffield.—Mr. H. Blacow Yates, F.R.C.S., has been appointed to a part-time demonstratorship in anatomy, and Mr. D. C. Harrison, Ph.D., to a lectureship in pharmacology.

Birth Control: Medical Aspects.—The Medical Committee of the National Birth-Rate Commission met on March 16th to begin an inquiry into all kinds of contraceptive methods and their effect on mind and body. The results of sexual abstinence, partial or complete, in married life, will also receive careful consideration. The members of the committee include Mr. Charles Gibbs, F.R.C.S. (chairman), Sir Arthur Newsholme (vice-chairman), Dr. Letitia Fairfield, Dr. Charles Porter, Dr. C. J. Bond, Dr. A. K. Chalmers, Dr. Agnes Dunnett, Miss Frances Ivens, M.S., Dr. Mary Scharlieb, Dr. Leonard Hill, Dr. Arthur Giles, and Prof. F. H. A. Marshall. The secretary is Rev. Sir James Marchant. The committee is sending out a questionnaire to gynæcologists throughout the country.

Courses at the Maudsley Hospital.—The following lectures and practical courses for a diploma of psychological medicine are to be given at the Maudsley Hospital, Denmark Hill, London, S.E. 5. Eight lectures on the Psychoneuroses, by Dr. Bernard Hart, on Mondays, at 3.30 and 5.30 P.M., from May 3rd; eight on Morbid Psychology, by Dr. Edward Mapother, on Tuesdays, at 2.30 and 4.30 P.M., from April 6th; four on the Pathology of Mental Diseases, including Brain Syphilis, by Sir Frederick Mott, on Fridays, at 2.30 P.M., from May 7th; two on the Legal Relationships of Insanity and Treatment, by Dr. C. H. Bond, on Tuesdays, June 1st and 8th, at 3 P.M.; eight on the Practical Aspect of Mental Deficiency, by Dr. F. C. Shrubsall, on Thursdays, at 2.30 P.M., from April 15th (transferring to Tuesdays in May); four on Crime and Insanity, by Dr. Norwood East, on Tuesdays, at 4.30 P.M., from May 4th; two on Abnormalities of the Fundus Oculi, by Mr. R. Foster Moore, on Wednesdays, May 5th and 12th, at 5.15 P.M.; three on Therapeutics, by Dr. A. W. Petrie, on Thursdays, at 4 P.M., from April 8th. There will also be six demonstrations in Clinical Psychiatry, by Dr. Mapother, on Wednesdays, at 2.30 P.M., from May 5th, and 12 clinical demonstrations in Neurology, six by Sir F. Mott, on Fridays in April and June, from April 9th, and six by Dr. F. L. Golla, on Thursdays, from May 6th, at 2.30 P.M. The fee for the whole course is 10 guineas; for one series of lectures, 2 guineas. In addition there is other opportunity for clinical experience at the hospital, and a limited number of vacancies for clinical assistants. Inquiries about lectures should be addressed to the Director of the Pathological Laboratory, Maudsley Hospital.

Operation on School-boy without Parent's Consent.—At an inquest held on a boy of 13 at Liverpool on March 10th it was stated that at a school inspection on Feb. 24th one of the medical officers had removed a small lump from the boy's chest. Making a diagnosis of molluscum contagiosum, he asked the boy whether he would like the lump taken away, and the boy agreed. The doctor then suggested that he should send for the boy's mother, but was told that she rarely left home. Accordingly he removed the lump without waiting for her consent. Later the boy complained of pains in the chest and was sent home from school. On the following day he died. The mother said that the lump had been on the chest since birth, and brought evidence to show that the operation had been done without proper aseptic precautions. The chief assistant medical officer of Liverpool elementary schools said that the doctor had exceeded his duty in operating on the child without consent; in his 20 years' experience this was the first case of a doctor performing an operation in school, and such a thing was against regulations. Prof. J. E. W. MacFall, who made a post-mortem examination, said that death was due to septicæmia, which had arisen from a septic healed cut on the boy's finger, and that the operation was not the cause of death, the wound on the chest being quite healthy. The boy's mother said that he had had the scratch on his finger for several weeks. The doctor who removed the lump admitted that he had not carried out the regulations of his department; he had acted, however, with a sole desire for the boy's welfare. The jury found that death was due to septicæmia resulting from the finger wound, and in no way connected with the operation. They recommended that no operation should be performed on a scholar without the parents' consent, and regret has been expressed on behalf of the education authority at this breach of its regulations.

Royal Society of Arts.—A Cantor lecture on Thermometry will be delivered by Mr. W. F. Higgins, M.Sc., of the National Physical Laboratory, on March 29th, at 8 P.M., at John-street, Adelphi, W.C.

Free Treatment at an Infirmary.—The board of the Ashton-under-Lyne District Infirmary is considering the appointment of an almoner to supervise admission to the wards. Many patients, it is stated, reap the benefits of charitable funds and the services of the honorary staff when they could well afford to pay for their treatment. The injured motorist and the victim of an accident, fully recompensed for all injury by an insurance company, are examples of those who should pay in full and without question the cost of their maintenance in hospital.

The late Dr. W. J. Barry.—Dr. William Joseph Barry, a well-known medical practitioner in South Wales, died at his residence in Penarth on March 18th. Born at Midleton, Co. Cork, in 1865, he qualified with the L.R.C.P., L.R.C.S. Glasg. in 1891, graduated M.D. Brux. in 1897, and obtained the F.R.C.P. Edin. in 1911. In the following year he took the M.D. degree of Durham University. Much of his earlier career was spent in foreign travel, but some 20 years ago he started medical practice in South Wales. He held appointments as hon. consulting physician to the Royal Hamadryad Seamen's Hospital, Cardiff, medical examiner to the Port of Cardiff for the Shipping Federation, and medical officer to the National Maritime Board for Cardiff. He was also a member of the medical board in connexion with the Welsh Ministry of Pensions at Cardiff.

Hospital Officers Congress.—The third annual congress of the Incorporated Association of Hospital Officers will be held on Friday, April 16th, at the Central Hall, Westminster. The delegates will be welcomed by the Mayor of Westminster and at 10.30 A.M. the congress will be formally opened by the President, Sir Arthur Stanley. At the morning session Miss R. E. Darbyshire, R.R.C., matron, University College Hospital, will read a paper on the Nursing Requirements of a Modern Hospital, and in the afternoon Mr. E. W. Morris, house governor, the London Hospital, will speak on the Geographical Distribution of Hospitals in Relation to Community Requirements. The social side of the congress will include a reception at the House of Commons, an official dinner to the delegates and their friends, and visits to London hospitals. Particulars from the hon. secretary to the Association, 28, Bedford-square, London, W.C. 1.

The Optical Convention, 1926.—This convention will be held from April 12th to 17th at the Imperial College of Science and Technology, Imperial Institute-road, South Kensington, London, S.W., under the presidency of the Astronomer Royal, Sir Frank Dyson, F.R.S. The object of the convention is to discuss British contributions to optics in recent years, and the industrial section of the exhibition will be confined to British manufactures. Communications on various scientific and technical subjects, including optical theory, optical history and education, optical glass and the manufacture of optical elements, astronomy, microscopy, spectroscopy and interferometry, photography, ophthalmology and spectacle manufacture, cinematography and projection, colour, photometry and illumination, surveying, including aerial surveying, optical apparatus in the fighting services have been promised, and popular lectures will be delivered. An exhibition is being arranged in three sections: (a) experimental and research, (b) historical, and (c) commercial. Applications for membership should be addressed to the Secretary at the offices of the convention, 1, Lowther-gardens, Exhibition-road, London, S.W. 7.

National Hospital, Queen-square.—At the annual general meeting of the Governors of the National Hospital for the Paralysed and Epileptic, Queen-square, held on March 23rd, it was announced that through a supplementary Royal Charter the name of the institution will be changed to "The National Hospital, Queen-square, for the relief and cure of diseases of the nervous system including paralysis and epilepsy." This step has been taken because the present title leads to the belief that the hospital is exclusively for paralysed and epileptic people. Moreover, patients suffering from other nervous diseases are deterred from coming owing to the fear associated with epilepsy, although only a small percentage of the patients are epileptic. In addition, people were inclined to gather from the old title the erroneous impression that the hospital is an institution for incurables.—A post-graduate course in Neurology will be held from May 3rd to June 25th. The course will include clinical lectures and demonstrations, teaching in the out-patient department, and pathological demonstrations. A course of lectures on the Anatomy and Physiology of the Nervous System will also be held if there are sufficient applicants. Further particulars may be obtained from the secretary of the hospital at Queen-square, W.C.

Yarmouth General Hospital.—At the annual meeting on Feb. 24th Dr. R. H. Shaw, the senior medical officer, pointed out that the staff is working under difficulties. The out-patient department is overcrowded, special departments are needed, and the structural deficiencies involve unnecessary expense. Perhaps in time, said Dr. Shaw, a new hospital could be put up.

Presentation to Dr. James Thomson.—On Friday, March 12th, Dr. James Thomson, of the royal and ancient burgh of Irvine, was entertained by his fellow practitioners and fellow townsmen to dinner at the King's Arms Hotel, and presented with a diamond ring as a mark of the esteem in which he is held. Dr. Thomson has practised for 40 years in Irvine, and intends to continue in practice there. Mrs. Thomson was presented with a silver tea service, and their daughter, Dr. Isabel Thomson, received a watch.

The late Dr. W. McAlister.—Born at Kilmarnock, Dr. William McAlister was the son of the late Dr. James McAlister, who long practised in that town. He was educated at Kilmarnock Academy and the University of Glasgow, where he graduated M.B., C.M. in 1879. Returning to help in his father's practice, he distinguished himself as an indefatigable worker devoted to his profession; in 1899 he took his M.D. at Glasgow University. Dr. McAlister held a number of local appointments; for 25 years he was surgeon to the Kilmarnock Infirmary, and for more than 10 years he acted as medical officer of health for the burgh. Amongst the schemes carried out under his régime was a maternity and child welfare centre, in which he took a keen interest; he also devoted much time and thought to the Kilmarnock Nursing Association. He was twice married and is survived by his wife, Dr. Jessie McAlister, who worked with him in his practice, and by a son of the first marriage.

Chelsea Clinical Society.—A meeting of this society was held at St. George's Hospital on Feb. 16th, when a discussion on the Endocrines was opened by Prof. Swale Vincent. The only instances of true substitution therapy at present, he said, were those of the thyroid and the pancreas, and perhaps of the ovary. Of these only one, the thyroid, was known for certain to produce any effects when given by the mouth. Many would include the parathyroid, though preparations of this gland were of no use when given by the mouth. Adrenin and posterior lobe pituitary were valuable as drugs, apart altogether from any question of substitution therapy, but neither of them had any effect when given orally. Dr. E. Bellingham Smith followed with an account of the clinical manifestations occurring when the ductless glands were at fault. Dr. F. J. McCann laid stress on the value of thyroid and calcium lactate in disorders of menstruation in the young. Especially were these drugs valuable in obese and anæmic subjects. Dr. H. A. Ellis reported good results with small doses of adrenin in the type of fatigue occurring about middle age, but was certain that only quite small doses of the drug should be administered.—Another meeting of the society was held at the Florence Restaurant on March 10th, when there was a discussion on Spa Treatment, to which Dr. Violle (Vittel), Dr. Dabidour (Mont d'Or), Dr. Forreyrolle (La Bourboule), Dr. W. Edgecombe, Dr. Argyll Campbell, Dr. M. B. Ray, and Dr. Lieven contributed. At both these meetings there was a good attendance.

Death of Dr. W. E. Haworth in Southern Rhodesia.—The London School of Hygiene and Tropical Medicine has received by cable the distressing news that Dr. W. E. Haworth has been killed in a motor accident in Southern Rhodesia. No details are yet to hand. It was only in August last that Dr. Haworth, who was then 60 years of age, entered with enthusiasm upon research work in medical entomology undertaken on behalf of the School, and interesting reports have been received from him showing with what energy and zeal he was throwing himself into the work. Not long before his last appointment Dr. Haworth was giving proof of his activity, remarkable for a man of his years, by scaling coconut palms at Dar-es-Salaam in the search for mosquito larvæ. The result of his researches at that time was embodied in a paper which appeared in the Transactions of the Royal Society of Tropical Medicine and Hygiene, and which was regarded as an interesting and important contribution to the literature on the subject. Dr. Haworth was the son of Robert Edmond Haworth, of Christchurch, New Zealand. He studied at Edinburgh University, took his M.B. and C.M. in 1892, and his B.Sc. in Public Health in 1893. From 1896–1917 he was in private practice in Southern Rhodesia, and was afterwards on active service with the Rhodesian native regiment in Nyasaland, German East Africa, and Portuguese East Africa. He held various Government appointments between 1920 and 1921, and devoted much time to observations on the breeding of mosquitoes in coconut palms. By his untimely death the London school has sustained a serious loss in the ranks of its research workers.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### *Asylum Officers' Superannuation.*

Mr. TAYLOR presented in the House of Commons on Tuesday, March 23rd, the Asylum Officers' Superannuation (Amendment) Bill, a measure to amend the Asylum Officers' Superannuation Act, 1909, which was read a first time.

## HOUSE OF LORDS.

### THURSDAY, MARCH 18TH.

### *Coroners Bill.*

The House went into Committee on the Coroners Amendment Bill, the Earl of Donoughmore in the chair.

On the motion of Lord MARSHALL of CHIPSTEAD, an amendment was agreed to safeguarding the right of the Corporation of the City of London to appoint its own coroner, a privilege which they have possessed since the granting of a charter by Edward IV. It was explained that in default of a special provision in the Bill the right would pass to the London County Council.

The Bill passed through Committee and was reported to the House.

### TUESDAY, MARCH 23RD.

### *Smoke Abatement.*

Viscount GAGE (Lord in Waiting), in moving the second reading of the Public Health (Smoke Abatement) Bill, said that it was intended to follow the precedent of previous Bills on the subject, to extend the scope of certain Acts, and to encourage a more rigid enforcement of the existing laws. The first clause gave power to take proceedings irrespective of the colour of the smoke. It also defined the expression "smoke" as including soot, ash, grit, and gritty particles. The Bill also gave power to the local authorities to prescribe standards for the emission of smoke and to require that certain new buildings should be provided with arrangements for smokeless heating. The Minister of Health, he said, was anxious to reduce the volume of domestic smoke, which was responsible for at least 50 per cent. of the pollution of the atmosphere. Dwelling-houses would be exempt, because the installation of smokeless heating in them would not be compatible with the rapid and inexpensive provision of working-class houses, which were so urgently needed. People were exceedingly conservative in their domestic habits, and no cheap form of smokeless fuel was at present available for domestic consumption. Under clause 3, the Minister of Health, after a public inquiry and in consultation with the local authorities or other interests concerned, could make orders extending the list of noxious or offensive gasses mentioned in section 27 of the Alkali, &c., Works Regulation Act, 1906. Another clause exempted ships from the operation of the Bill. The measure would not bring about the complete disappearance of fogs or smoke which had such unpleasant and harmful effects, but the Minister of Health had gone as far as he could without adding to the cost of living and of production and manufacture.

Lord NEWTON said that the Bill, if amended in Committee, might do much good.

Earl DE LA WARR asked for an inquiry with a view to terminating the metallurgical exemptions contained in the Bill, and to enforcing model by-laws on local authorities.

Viscount NOVAR said he was disappointed that the Bill did not apply to Scotland.

The Marquess of SALISBURY (Lord Privy Seal) said he agreed that the need for the Bill was at least as great in Scotland as in England, but the law was not the same in the two countries. The Government had not overlooked the matter and intended to introduce a separate Bill for Scotland.

The Bill was read a second time.

## HOUSE OF COMMONS.

### TUESDAY, MARCH 16TH.

### GOVERNMENT ECONOMY BILL.

Continuing the debate on the second reading of the Economy (Miscellaneous Provisions) Bill reported in THE LANCET of last week,

Dr. DRUMMOND SHIELS said Scotland was very much interested in the Insurance Act. The population of Scotland as estimated down to the middle of 1925 was 4,891,300. One-third of these, or about 1,700,000, were in the Health Insurance scheme, two-thirds of that number being men and one-third women. No fewer than 28·3 per cent. of the population were resident within ten miles of the City of Glasgow, and 37 per cent. were in the four cities of Edinburgh, Glasgow, Dundee, and Aberdeen. On the other hand, the Highland counties covering 56·7 per cent. of the total area of Scotland had only 9·7 per cent. of the total population and had also a much reduced proportion of insured people. These conditions had added very greatly to the difficulty of the efficient administration of the Insurance Acts in Scotland. They also made the hospital problem of Scotland a very important one. A committee was appointed in June, 1924, to inquire into the state of the hospital services in Scotland and to make recommendations. That committee had recently reported as follows: "Our problem arises out of the fact that there are many persons in Scotland who, mainly because there are not enough hospital beds, are unable to get at the proper time the hospital treatment which they need. For all those persons the shortage of beds means a prolonging of their suffering; for some it means that treatment is delayed beyond the stage when effective treatment is possible; and for a few it may mean that they die before they can be admitted to hospital." The committee pointed out that even the waiting-lists did not give all who ought to be placed upon them. But as it was, in the six teaching hospitals of Scotland at the end of 1925 the waiting-lists were as follows: In the Royal Infirmary, Edinburgh, with 963 beds, there was a waiting-list of 2076; in the Royal Infirmary, Glasgow, with 665 beds, there was a waiting-list of 759: in the Western Infirmary, Glasgow, with 600 beds, there was a waiting-list of 1862; in the Victoria Infirmary, Glasgow, with 260 beds, the waiting-list was 450; at the Royal Infirmary, Dundee, with 441 beds, the waiting-list was 339; and at the Royal Infirmary, Aberdeen, with 327 beds, the waiting-list was 368. The total accommodation in these six Scottish hospitals was 3256 beds and there was a total waiting-list of 5851. Detailed recommendations were made of the number of additional beds required in each area, and the total new beds necessary in the opinion of the Committee was 3000. The committee made certain recommendations to help the voluntary hospitals to carry out a task beyond their own resources. One of those recommendations was a Treasury Grant of £900,000. Judging from the reception given to a similar recommendation by the English Hospitals Commission, the prospect of that grant being given was not very hopeful. The point he wished to make was that the committee found that about one-third of the beds in the Scottish hospitals were used for insured persons, and therefore one-third of the deficiency, amounting to about 1000 beds, was required for the needs of insured persons. This committee definitely recommended that a contribution to the voluntary hospitals should be made from the National Health Insurance Funds to help to solve the terribly serious problem of hospital accommodation in Scotland. Obviously, to get the specialist benefit required for certain cases and for other treatments of a complicated kind, the coöperation of the voluntary hospitals was required. It was only fair, then, that at least a contribution bearing a rough relation to the services rendered to insured persons should be made from Insurance Funds. Both on humanitarian and economic grounds the extension of medical benefits to specialist service and to institutional treatment was in the best interests of the country. It was just at this time when those various committees and commissions had shown how much all the money which the fund could produce under the present scale of contributions was needed, that the Chancellor of the Exchequer ruthlessly broke the bargain which had been made and destroyed all the hope of an extension of the services which were so much required by the insurance contributors of the country.

Mr. RHYS DAVIES said that he had endeavoured to make a calculation as to the amount which would actually be saved by the Government on the provisions relating to National Health Insurance. If those calculations were correct the estimated saving would be about £1,250,000. Each of the 15,000,000 insured persons would have taken away from him as from January, 1926, the sum of 5*s.* 6*d.* per annum. He would like to know if the Government was united on these proposals. He thought that he was right in saying that the approved societies would resist these proposals as far as lay in their power. A little over two years ago it was decided in agreement with the doctors that the medical benefit should be increased and the Government was compelled to find a sum of 3*s.* per insured member from some central fund. They took that amount from the Miscellaneous Receipts Account, derived in the main from proceeds connected with unclaimed stamps. He understood that that fund was now exhausted, and consequently the Government were now asking approved societies to shoulder the 3*s.* which was hitherto dealt with from the fund he had named. It would be interesting to find out the amount of money necessary to implement that agreement for 1921-25 in respect of the 3*s* because this Bill was retrospective. He thought it was grossly unfair to call upon the funds of the approved societies for the 3s. to which he had referred when the societies had had no say whatever in arriving at the agreement in connexion with that amount. Successive Governments had had great trouble with the panel doctors in this connexion. When the Act of 1911 was passing through the House the payment to panel doctors then proposed was at the rate of 4s. per insured person per annum. That sum had grown to 6s. 6d., to 7s. 6d., to 9s., to 11s., and now they were told that 13s. was required for medical benefit purposes.

Mr. SIDNEY WEBB asked if statutory obligations to creditors, pensioners, and public servants were more sacrosanct than obligations to the 15,000,000 insured contributors. It was perfectly true none of the benefits at present being paid would be diminished, but no one had had the candour to point out that if this Bill passed the benefits would be diminished in the future. Even existing benefits were rendered insecure by the cut which the Government was making.

The debate was adjourned until the following day.

### WEDNESDAY, MARCH 17TH.

#### *Economy Bill: Resumed Debate.*

The debate was resumed on the second reading of the Economy Bill.

Mr. LLOYD GEORGE said that Mr. Churchill had been beaten by the Admiralty, and that was why he was attacking Health and Unemployment Insurance and Education. There was no reason why they should spend all this money on cruisers which were not needed at all. A clear and definite bargain was made with the approved societies that if their funds accumulated they would be enabled to increase their benefits. That bargain to which the Chancellor of the Exchequer was a party was agreed to by the House of Commons, therefore it was made by the nation. Now the House of Commons was asked to go back upon it. The right hon. gentleman had not waited before taking action until the approved societies had examined the recommendations of the recent Royal Commission. The majority of the Royal Commission turned down every proposal that would involve an additional burden on the taxes; but they said that by means of the accumulated funds and the contributions which were now being paid the approved societies could grant additional medical benefits and additional sickness allowances. Additional benefits which had been dangled before contributors for years were now to be denied them at the very moment of realisation. And what *for?* In order to save a penny in the pound on the income-tax. It was a distinct breach of faith with the industrial classes and might do much mischief at the present time. The Chancellor of the Exchequer did not really save money by this transaction. The Bill simply threw the whole of the burden on the rates. The alternative to this Bill was for the Chancellor of the Exchequer to say to the Government that he would only find so much for armaments.

Mr. NEVILLE CHAMBERLAIN (*Minister of Health*) claimed that the Bill did not reduce the value of the benefits received by insured persons. The Bill did not touch the surpluses which were accumulated under the first valuation, which amounted to something *over* £17,000,000, and the benefits which had been decided on by the various societies as a result of that first valuation would still go on. It did not touch the surpluses which had been accumulated since the second valuation was completed up to Sept. 31st, 1925. What it did was to slow down as from Jan. 1st this year the accumulation of further surpluses in the funds of the approved societies. They were not going to throw any society into deficiency by reason of the diminution of the State grants, because there was a provision which was contemplated by the Royal Commission for using the contingency fund—the reserve suspense fund—for assisting weak societies. The benefits declared on the second valuation would be available up to the end of 1931, and the benefit which might have been declared on the third valuation would not have come into operation until after 1931, so that there was some little time before the slowing down would be felt. As to this being a breach of faith, he would impress on the House that, in the opinion of the Royal Commission, Parliament was free to make such changes, however drastic, as experience of the 1911 Act had shown were desirable. Altogether, since the scheme was started, extra contributions beyond those provided in the statute had been paid by the State amounting to upwards of £21,000,000. There had been nine amending Acts and the scheme had been altered in all kinds of ways. It was really absurd, therefore, to say that it was a breach of faith at this stage to make a fresh alteration because one did not happen to like it. The real thing the House had to consider was not whether the Government had broken a bargain, but whether what the Government now proposed to do was fair and justified on its merits. The House should ask themselves if the Government were not entitled to slow down the rate at which the societies would accumulate these surpluses in future when the taxpayer was so heavily burdened.

The second reading of the Bill was carried by 322 votes to 142—Government majority, 180.

The Bill was then committed to a committee of the whole House.

#### *Medical Officers in Colonial Service.*

Mr. FORREST asked the Secretary of State for the Colonies the present position of the differences between his department and the British Medical Association with regard to the conditions of employment of medical officers in the Colonial service, and more especially in East Africa.—Mr. AMERY replied: I received a deputation from the British Medical Association on March 5th. Correspondence with the Association is still proceeding.

#### *Danger of Open Dustcarts.*

Mr. CAMPBELL asked the Minister of Health how many local authorities employed open dustcarts at the present time; and whether he would consider making the use of automatic closing dustcarts obligatory on local authorities.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: On the first part of the question, my right hon. friend regrets that he has not the information. On the second part, he has no authority to make the use of such dustcarts obligatory, but local authorities are increasingly making use of improved vehicles.

### THURSDAY, MARCH 18TH.

#### *The Legitimacy Bill.*

Colonel DAY asked the Prime Minister whether the Legitimacy Bill was likely to be brought before the House this year.—Mr. BALDWIN replied: Yes, Sir. The Government desire, if possible, to pass the Bill into law this session.

#### *Tuberculin Tested Milk.*

Mr. ALFRED WILLIAMS asked the Minister of Health the number of pedigree dairy herds which were supplying Certified Grade A (tuberculin tested) milk at the present time; whether all animals in these herds had been tested for tuberculosis; and, if so, at what age calves had to be tested.—Mr. NEVILLE CHAMBERLAIN replied: There are approximately 200 herds producing Certified or Grade A (tuberculin tested) milk, but I have no information as to how many of these are pedigree herds. The cows in milk in these herds and all the animals which are in contact with them are required by the Milk (Special Designations) Order to be submitted to the tuberculin test. Calves are not usually kept in contact with these cows, and consequently there is no necessity for young stock to be tested until they are introduced for milking purposes. If in any case calves are kept in contact with the cows, they must be tested at the time of the general tests of the herd.

#### *Life Pensions to Nurses and Officers.*

Mr. ROBINSON asked the Minister of Pensions what was the number of life pensions in issue on Feb. 24th, 1926, to officers, nurses, and other ranks respectively, where the assessment was 20 per cent., 30 per cent., 40 per cent., 50 per cent., 60 per cent., 70 per cent., 80 per cent., 90 per cent., and 100 per cent.; and what proportion was due to wound or injury, and what proportion was due to disease.—Major G. C. TRYON replied: The approximate number of life pensions in payment to officers, nurses, and other ranks, at the end of February, 1926, were as follows:

*Table of Life Pensions to Officers, Nurses, and Other Ranks.*

| — | Per cent. | | | | | | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100 | 90 | 80 | 70 | 60 | 50 | 40 | 30 | 20 | |
| Officers .. .. | 1,220 | 50 | 425 | 675 | 850 | 1,550 | 1,300 | 2,300 | 4,160 | 12,420 |
| Nurses .. . | 56 | 1 | 1 | 2 | 7 | 13 | 10 | 32 | 63 | 185 |
| Other ranks .. .. | 10,200 | 2,030 | 6,600 | 13,000 | 20,700 | 32,100 | 28,400 | 60,350 | 90,000 | 265,000 |

The proportions due to wounds and injuries and to diseases were as follows :

| | *Wounds and Injuries.* | *Diseases.* |
|---|---|---|
| Officers.. .. .. | 64 per cent. .. | 36 per cent. |
| Nurses .. .. .. | 17 „ „ .. | 83 „ „ |
| Other ranks .. .. | 70 „ „ .. | 30 „ „ |

Miss WILKINSON asked the Minister of Pensions how many nurses had received pensions as a result of disabilities arising from war service; and how many had been refused such pensions—Major G. C. TRYON replied: Up to the end of February last awards had been made to 2542 nurses. The records of the Ministry do not enable me to give the information asked for in the latter part of the question.

### *Health Insurance in Wales.*

Mr. DAVID GRENFELL asked the Minister of Health whether he would consider setting up a consultative committee for Wales to correspond with the representative body which had been established in England in connexion with National Health Insurance administration.—Mr. NEVILLE CHAMBERLAIN replied: I am considering whether arrangements may not usefully be made for regular consultation on matters of sufficient importance with persons in Wales familiar with approved societies' work.

### *Unhealthy Refuse Dump at Greenford.*

Colonel DAY asked the Minister of Health if his attention had been drawn to the fact that a refuse dump, several acres in extent, at Greenford, Middlesex, was menacing the health of the inhabitants of this district; and would he take such action as would overcome the danger of infection during the coming summer months.—Mr. NEVILLE CHAMBERLAIN replied: I am aware of this dump. Recent inspections showed great improvement in the conditions, and there was no evidence that there was menace to health. I have, however, directed that another inspection shall be made.

### *National Health Insurance Report.*

Mr. RAMSDEN asked the Minister of Health whether he had now considered the recent report of the Royal Commission on National Health Insurance; and whether it was proposed to introduce legislation to give effect to any of the recommendations made in this report.—Mr. NEVILLE CHAMBERLAIN replied: I have made myself acquainted with the recommendations of the Royal Commission on National Health Insurance, but I have not yet been able to give them the detailed consideration which they require, and I am not, therefore, at present in a position to make any statement as to the introduction of legislation to give effect to all or any of the recommendations.

### *New Site for London University.*

Mr. HARRIS asked the President of the Board of Education whether the Government had come to any conclusion as to the site for the headquarters of the London University; and whether he could make any statement of policy, so that the necessary funds might be collected.—Mr. R. MCNEILL (Financial Secretary to the Treasury) replied: I am not at the moment in a position to make an announcement.

### *Defective Vision in Children.*

Sir GEORGE BERRY asked the President of the Board of Education if his attention had been drawn to the recent report of the Council of British Ophthalmologists on the education of children suffering from defective vision due to myopia and other causes; and whether he proposed to take any action with regard to the recommendations contained therein.—Lord E. PERCY replied: I have seen the report in question. Provision has already been made in various parts of the country for the education of partially blind children on the general lines recommended in the report, and I hope that this provision will be extended as circumstances permit.

## MONDAY, MARCH 22ND.

### MEDICAL SERVICES IN THE NAVY.

The House considered the Navy Estimates on Report.

Sir BERTRAM FALLE urged that an appeal board should be granted to officers and men who were invalided out of the Navy. It was an absolutely wicked thing that the doctor who first examined the man should be able to put him out of the service. Last year 53 officers were invalided from the Navy for tuberculosis alone, and of that number only five cases were attributable to service. Last year, also, 217 young men were invalided from the Navy, where the standard of physical efficiency was the highest of any for tuberculosis. Yet within the past few years these men had been passed in as absolutely fit. Again, of these, only three cases were said to be attributable to service. He did not ask for a naval medical board, but only for a civilian board. This concession would not cost the Admiralty as much as it did to throw these men out, and he hoped that the First Lord would give his attention to the matter.

Mr. AMMON said that there had been a considerable amount of criticism of the cost of the medical service in the Navy. The First Lord had promised to look into the matter, and he would be glad to know the result of his investigation. The complaint made was that, compared with other services, the charge per head was excessive. Had inquiries been made during the past year into the possibility of bringing the cost of the medical service within more reasonable limits? The First Lord should also give consideration to the suggestion that some economy could be effected by the pooling of the medical systems of the three services.

Mr. BRIDGEMAN (First Lord of the Admiralty) said that, as he understood Mr. Ammon's remark about medical services, it was that there should be more coöperation than existed at present. A great deal was being done in that direction. So far as hospitals were concerned, they were gradually trying to use the same hospitals for the other services as well as the Navy, sometimes abolishing the Navy one and using the other, and vice versa. In that way improvement was undoubtedly possible. He thought that there were many difficulties in the way of a common medical service for the three branches. He doubted very much if they could recruit a doctor if he did not know to which of the three services he might be sent.

Sir GERALD HOHLER said that there was an opportunity to try to effect economies by combining the medical services at Chatham. There was there the finest hospital in the country, and the Navy and the Army were together in the same town.

### *Operation on Liverpool Schoolboy.*

Sir JOHN PENNEFATHER asked the President of the Board of Education if his attention had been called to a case in Liverpool where a boy of 13 died three days after a school medical officer had performed an operation upon him in the school; if so, had he inquired, or would he inquire, whether the death of this boy could be attributed to the operation; and, in that case, whether his department assumed responsibility for the payment of proper compensation to the parents.—Lord E. PERCY replied: I am aware of the occurrence referred to, which I deeply deplore. At the coroner's inquest the jury, after hearing the medical evidence, found that the boy's death was due to septicæmia from a wound on the finger, and was in no way connected with the operation. The performance of this operation appears to have been a contravention of the local authority's instructions to their school medical officers and of the practice of the school medical service.

Mr. HAYES asked how far the responsibility of the local education authority went in respect of the operation performed on this child during the time that he was under the authority's control.—Lord E. PERCY replied that he did not know whether Mr. Hayes was referring to a legal or a moral responsibility. He could not give a legal opinion on the matter.—Mr. HAYES asked whether, if there was no legal responsibility, or even if there was, would it not be handsomer that this matter should be dealt with by an *ex gratia* grant? Would the noble lord inquire into it, to see if such a grant could not be made out of public funds?—Lord E. PERCY said that he had no power to make any grant. That was a matter for the local authority.—Mr. HAYES asked whether, although Lord E. Percy had no power to make any grant, he would do his utmost to make representations to the local authority. If representations were received from the noble lord he was sure the local authority would give consideration to them and act in a very generous manner if he allowed them to do so.—Lord E. PERCY said that he must leave the matter to the local authority who, he was sure, were impressed with its importance.—Mr. HAYES asked whether, in the event of the local education authority giving generous consideration to the matter, Lord E. Percy would approve of their policy, but the speaker said that that was a hypothetical question.

### *Insanitary Conditions in Poplar.*

Mr. LANSBURY asked the Minister of Health whether he was aware that a considerable number of families are living under unhealthy and insanitary conditions in the borough of Poplar; that during the past 25 years the public health authority for that borough had made repeated applications and representations to the London County Council, urging that action should be taken to put an end to this condition of affairs; that the inspectors of the Ministry of Health had condemned certain areas as unhealthy, the latest date on which this was done being Dec. 10th, 1924, and the areas thus condemned being Birchfield-street, Bromley, Dunbar Cottages, and Baker's Alley; and, in view of the failure of the London County Council to carry out its statutory duties, would he take such steps as were within his power to compel that authority to deal with those areas.—Sir KINGSLEY WOOD replied: My right hon. friend is aware of insanitary conditions in the borough of Poplar. The particular areas to which the hon. Member refers were included in an improvement scheme made by the London County Council which my right hon. friend confirmed. The County Council are taking steps to carry out the scheme, and I understand that considerable progress has been made in regard to the acquisition of the property in these areas.

*Birth and Death Rate in Bengal.*

Mr. SCURR asked the Under Secretary of State for India the birth-rate and death-rate for the province of Bengal during the years 1923 and 1924.—Earl WINTERTON replied: The registered birth-rate for 1923 was 20·9 per 1000, and the death-rate 25·5 per 1000. Figures for 1924 are not yet available.

*Juvenile Offenders and Psycho-Analysis.*

Captain FAIRFAX asked the Home Secretary on what grounds, and to what extent, he had sanctioned the practice of subjecting juvenile offenders to experimenters in psycho-analysis; and what precautions he was taking against any possible dangerous results.—Sir W. JOYNSON-HICKS replied: I have not sanctioned any such experiments, nor have I any intention of doing so. I may add that the question whether any further provision should be made for the medical examination of young offenders, which is a very different matter, is being considered by the committee now inquiring into the treatment of young offenders.

*Tuberculin Tested Milk.*

Mr. ALFRED WILLIAMS asked the Minister of Health whether, in the case of a breeding herd which was supplying Grade A (tuberculin tested) milk, young heifers and bulls which were not in contact with the milking cows had to be tested for tuberculosis.—Mr. NEVILLE CHAMBERLAIN replied: No, Sir.

TUESDAY, MARCH 23RD.

*Sales of Methylated Spirits.*

Mr. HARDIE asked the President of the Board of Trade if he could give the sales in the United Kingdom of methylated spirits and the prices for November last, and the sales and prices for January or February this year.—Mr. A. M. SAMUEL (Parliamentary Secretary to the Overseas Trade Dept.) replied: I have no information as to the sales of methylated spirits, but in November 750,000 proof gallons of spirits were delivered for methylation in the United Kingdom, in January 728,000 proof gallons, and in February 726,000 proof gallons. The wholesale price of industrial methylated spirit, 64 per cent. over-proof, was at the rate of 2*s.* 5*d.* per gallon, and that of mineralised methylated spirit of the same strength 3*s.* 8*d.* per gallon, throughout this period.

*Baker's Itch.*

Mr. HARLAND asked the Minister of Health whether he was aware of the prevalence in this country of the disease known as baker's itch; whether such disease was notifiable; and whether he had any evidence showing that this disease was due to the modern use of chemicals in the bleaching of flour.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative. This disease, which is not notifiable, was investigated by the medical department of the Ministry of Health in 1922, and these investigations did not disclose any reasons why it should be made notifiable. The answer to the last part of the question is in the negative.

*Arsenic in Fruit.*

Colonel DAY asked the Minister of Health if his department had received representations from the Surbiton council with regard to fruit exposed for sale and found to contain arsenic; and what action was being taken in this regard.—Mr. NEVILLE CHAMBERLAIN replied: Yes, Sir, I have received representations from the district council. The present Imported Food Regulations enable port and riparian sanitary authorities to seize and destroy any imported food which is unfit for human consumption, and I do not think that it would be practicable to strengthen these regulations in any way short of imposing an absolute prohibition on the importation of apples, a measure which would not in my view be justified in the present circumstances. I take the opportunity of adding that I am not aware of any case in which an excessive quantity of arsenic has been found on home or Empire-grown apples.

INADEQUACY OF THE BIRMINGHAM HOSPITALS.—The annual report of Birmingham *General Hospital* recommends the establishment of contributory schemes throughout the district served by the hospital, the financial position of which is unsatisfactory. As soon as these schemes are in working order the governors purpose abolishing the ticket system. The annual meeting declared in favour of the preparation of a scheme for the "establishment and development of a hospital centre on a suitable site elsewhere than in the centre of the city." The Birmingham hospitals are admittedly entirely inadequate. They all have long waiting-lists, and it is estimated that at least 300 more beds are urgently needed. The out-patient departments are equally congested.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 13TH, 1926.

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 212 (last week 190); scarlet fever, 1738; diphtheria, 1180; enteric fever, 43; pneumonia, 1257; puerperal fever, 57; cerebro-spinal fever, 8; acute poliomyelitis, 4; acute polio-encephalitis, 2; encephalitis lethargica, 45; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 112. There were no cases of cholera, plague or typhus fever notified during the week.

*Deaths.*—In the aggregate of great towns, including London, there were 2 (1) deaths from enteric fever, 1 from small-pox, 119 (60) from measles, 9 (3) from scarlet fever, 52 (3) from whooping-cough, 51 (16) from diphtheria, 43 (12) from diarrhœa and enteritis under 2 years, and 88 (15) from influenza. The figures in parentheses are those for London itself. For the sixth time during the last eight weeks the deaths from measles exceed 100. The small-pox death was fully described in THE LANCET last week (p. 610).

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.*

## LECTURES, ADDRESSES, DEMONSTRATIONS &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 29th, to SATURDAY, April 3rd.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tuesday and Thursday, at 2 P.M., Dr. Low and Dr. Manson-Bahr will give special lecture-demonstrations illustrated by cases in hospital.—WESTMINSTER HOSPITAL, S.W. Special demonstration in Clinical Surgery on Wednesday at 2 P.M. by Mr. A. Tudor Edwards. Further information from the Secretary of the Fellowship of Medicine.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, March 30th.—5 P.M., Sir Thomas Horder: *Endocarditis (last Lumleian Lecture).*

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn fields, W.C.
MONDAY, March 29th.—5 P.M., Mr. Shattock: Pathological Conditions of the Breast.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, April 1st.—4 P.M., Dr. Pearson: Marasmus.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
TUESDAY, March 30th.—4.15 P.M., Dr. D. Dougal: Ectopic Pregnancy.

# Appointments.

*FORD, R. K., M.B., B.S. Lond.*, has been appointed Resident Medical Officer to the Fulwood Institution of the Preston Union.

STOBBS, J. A., M.B., B.S. Durh., Certifying Surgeon under the Factory and Workshop Acts for the Alston District of the County of Cumberland.

TENNENT, A., M.B., Ch.B. Otago, Resident Medical Officer, Freemasons Hospital and Nursing Home, Fulham-road, S.W.

WEBSTER, J. M., M.B., Ch.B. St. And., Resident Medical Officer, Chesterfield Workhouse and Infirmary.

Queen Charlotte's Maternity Hospital: NELKEN, G. J. V., B.S., M.R.C.S., L.R.C.P., Senior Resident Medical Officer; REID, J. K., M.B., Ch.B. Liverp., District Resident Medical Officer.

Salford Royal Hospital: ECCLESTON, C., M.B., Ch.B., and MALCOLM, A., M.B., Ch.B., House Surgeons; ROANTREE, W. B., M.B., Ch.B., B.A.O., House Physician.

University of Manchester: BLAIR, DAVID, M.D. Glasg., and CORMAC, H. D., M.B., M.S. Madras, D.P.M. Manch., Lecturers in Mental Diseases.

# Vacancies.

*For further information refer to the advertisement columns.*

*Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College.*—Second Asst. Res. M.O. £300.

*Belgrave Hospital for Children, Clapham-road, S.W.*—H.P., H.S., and Asst. H.P. Each at rate of £100.

*Birmingham City Mental Hospitals.*—Asst. M.O. £350.

*Cambridge, Addenbrooke's Hospital.*—Cas. O., and Res. Anæsthetist. At rate of £130.

*Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.*—Hon. Asst. Out-patient Reg.

*Derbyshire Royal Infirmary, Derby.*—H.S. £200. Also Asst. H.S. and Cas. O. Each at rate of £150.

*Durham County Council.*—Dist. Tub. M.O. £600.

*Exminster, Devon Mental Hospital.*—Jun. M.O. £300.

*Finchley Urban District, Ante-Natal Clinic.*—Med. Practitioner required. 2 guineas per session.

*Hackney Hospital, 230, High-street, Homerton.*—Jun. Asst. M.O. £350.

*Hospital for Consumption and Diseases of the Chest, Brompton, S.W.*—H.P. for six months. £50.

*Hospital for Diseases of the Throat, Golden-square, W.*—Med. Reg.

*Hospital for Epilepsy and Paralysis, Maida Vale, W.*—Res. M.O. and H.P. At rate of £150 and £100 respectively.

*Hospital for Sick Children, Great Ormond-street, W.C.*—H.S., H.P., and Asst. Cas. O. £50 in each case.

*Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.* Res. H.P. and H.S. At rate of £100 and £75 respectively.

*Inverness, Northern Infirmary.*—Jun. Med. Res. £100.

*Lambeth Hospital, Brook-street, S.E.*—Pathologist. £500.

*London Temperance Hospital, Hampstead-road, N.W.*—Surg. Reg. 40 guineas.

*Manchester, Ancoats Hospital.*—H.S. At rate of £100. Also Asst. M.O. in Ven. Clinic. £1 1s. per clinic.

*Manchester Children's Hospital and Northern Hospital for Women and Children.*—Pathologist. £400.

*Manchester Royal Infirmary, Roby-street.*—Res. M.O. Also Asst. M.O. At rate of £200 and £100 respectively.

*Miller General Hospital for South-East London, Greenwich-road, S.E.*—H.P., £125. Also Asst. in Out-patients' Dept. £150.

*Oxford, Radcliffe Infirmary and County Hospital.*—Hon. S., Hon. Asst. P., and Hon. Asst. S.

*Paddington Green Children's Hospital, W.*—H.P. and H.S. Each £150.

*Parish of St. John, Hampstead, New End Hospital.*—Sen. Res. Asst. M.O. £250.

*Prince of Wales's General Hospital, Tottenham, N.*—Two H.S.'s. and one H.P. At rate of £120. Also Jun. H.S. and Jun. H.P. At rate of £90.

*Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.*—Asst. Res. M.O. At rate of £80.

*Redhill, Surrey, Royal Earlswood Institution.*—Jun. Asst. M.O. £250.

*Royal Chest Hospital, City-road, E.C.*—Res. M.O. and H.P. At rate of £150 and £100 respectively.

*Royal National Orthopædic Hospital, 234, Great Portland-street, W.*—H.S. At rate of £150 Also Hon. Ophth. S. and Hon. Dental S.

*St. Bartholomew's Hospital, E.C.*—Rose Research Fellowship in Lymphadenoma. £600.

*St. Leonards-on-Sea, Buchanan Hospital.*—H.S. £150.

*St. Mary's Hospital for Women and Children, Plaistow, E.*—Asst. Res. M.O. At rate of £130.

*St. Stephen's Hospital, 369, Fulham-road, S.W.*—Third Asst. M.O. £300.

*Southport Infirmary.*—Hon. Asst. S.

*Sunderland Borough Mental Hospital, Ryhope.*—Asst. Med. Supt. £500.

*Swansea Hospital.*—H.S. £150.

*University of London, King's College for Women.*—Head of Dept. of Hygiene and Bacteriology, &c. £400.

*Wallasey, Victoria Central Hospital.*—Jun. H.S. £100.

*West Ham County Borough.*—Asst. M.O. £600.

*West London Hospital, Hammersmith-road, W.*—Hon. Med. Radiologist.

*Winchester, Royal Hampshire County Hospital.*—H.P. £150.

*Wrexham and East Denbighshire War Memorial Hospital.*—Sen. and Jun. H.S's. At rate of £120 and £80 respectively.

# Births, Marriages, and Deaths.

## BIRTHS.

Abrahams.—On March 21st, the wife of Dr. Adolphe Abrahams, of Brook-street, W., of a daughter.

Currie.—On March 10th, at Morningside, Torquay, the wife of Dr. Currie, of a son.

Ritchie.—On March 14th, at Douglas-crescent, Edinburgh, the wife of Dr. W. T. Ritchie, of a daughter.

## DEATHS.

Adams.—On March 20th, at Bussage, Brimscombe, Stroud, G. E. D'Arcy Adams, M.D., aged 79.

Armstrong.—On March 17th, at Inglemere, Enfield, Arthur James Mackenzie Armstrong, M.R.C.S., L.R.C.P. (late of Southgate).

Barry.—On March 18th, at Plymouth-road, Penarth, Glam., William Joseph Murphy Barry, M.D., F.R.C.P., aged 60 years.

Finlayson.—On March 19th, very suddenly, at his residence, Elson-road, Formby, Lancs, Harold Turner Finlayson, M.B., Ch.B., aged 36.

Gosling.—On March 16th, suddenly, at his residence, Fivelands, Moseley, Birmingham, Charles Edward Gosling, M.D., in his 74th year.

Hopkins.—On March 16th, at St. Matthew's-gardens, St. Leonards-on-Sea, Charles Leighton Hopkins, B.A., M.B. B.Ch. Camb., late Medical Superintendent, York City Mental Hospital.

Taylor.—On March 15th, after a brief illness, Inglis Taylor, M.B., F.R.C.S. Edin., of 22A, Cavendish-square, London, W.1.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts.

## PUBLIC HEALTH IN PERSIA.

### 1914–24.

By A. R. Neligan, M.D. Lond., M.R.C.S., D.T.M. & H. Camb.,

PHYSICIAN TO H.M. LEGATION, TEHRAN; BRITISH REPRESENTATIVE ON THE PERSIAN SANITARY COUNCIL.

### Part II.*

### *Epidemic and Endemic Diseases.*

Persia's three long land frontiers run with those of countries liable to outbreaks of plague and cholera. In Iraq, for instance, the former disease is endemic. The ports on her seaboard in the Persian Gulf are in regular communication with Bombay and Karachi, where both diseases are endemic, and on the opposite shore of the Gulf, along the Arab coast, and perhaps in the interior, there are endemic plague centres. Russia and Trans-Caucasia are liable to cholera and typhus fever; Trans-Caspia, Turkestan, and the Astrakhan district to plague. Any account of Persia's epidemiological situation would, therefore, in view of the possibility of the country serving as a channel for the spread of disease to the west, lose in interest were outbreaks on her frontiers not mentioned.

In the following résumé of the appearances of plague and cholera during the years 1914 to 1924, names of places in Persia itself are printed in italics, of places in the neighbouring countries in ordinary type.

In this résumé it will be noted that all ship-borne cases removed to quarantine have been included. Further, that in spite of the regular appearance of plague on her frontiers, the name of only one place in Persia recurs with any frequency (Mohammerah), and that in the case of all other places where undoubted plague has appeared during the last 11 years the disease was imported, and, with a single exception to be noted below, *did not spread.* As regards Mohammerah, it used to be said that plague was always imported from Basra only 25 miles higher up the River Shatt Arab, with communications by land as well as by water. It has been suggested that plague is by now endemic in Mohammerah town, but the facts are, on the whole, against this supposition.

Abadan town, on the island of that name six miles down stream from Mohammerah, has, however, come to cause anxiety. The name appears in the years 1923 and 1924 only, and yet some 700 cases have occurred there. The explanation is that between 1909 and 1912 the Anglo-Persian Oil Company set up a refinery on the island, and that, instead of a few huts, there is now a considerable town and several villages, with a total population of some 50,000 souls. In the early days of the rush of native labour and shopkeepers to the island, huts and bazaars sprang up on no definite plan on land outside the Company's control, and on which it was not allowed to interfere. When, therefore, plague was imported into Mohammerah in 1923 and thence spread to Abadan there was a sharp epidemic. The Company has taken most energetic measures since then. Side by side with its elaborate medical service it has organised a very complete sanitary section with port medical officer and assistants, isolation hospital, quarantine station, and disinfecting plant. In 1924 the number of cases was reduced by more than half. Between April and July more than 12,000 rats were destroyed by catchers brought from India.[1] The Company has for nearly a year now been building steel and brick huts for its labourers, of whom there are more than 10,000, on a site well away from the native town. Drainage is a difficult problem where the subsoil water is found at 2 feet, but it is being solved by means of pumps. Further, a piped water-supply was completed in December, 1924. The River Bameshir has been tapped four miles away by a 16-inch pipe, and a 2,000,000 gallon reservoir has been made, which will deliver filtered and chlorinated water to stand-pipes in the workers' village. The Company has also planned a site for a new town, and the inhabitants of the old are being encouraged to remove to it. A piped water-supply has been led to this site also. Everything possible is, therefore, being done to keep out cholera as well as plague. The problem is not an easy one on account of the communications by land and by small craft on the river.

### *Plague in the Interior.*

The question naturally arises whether plague is ever likely to gain a footing on the Persian plateau. From the résumé it is clear that, during the 11 years under review, it did not spread from any of the points attacked in the low land along the shore of, and around the head of, the Gulf—the most

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* Part I. appeared in The Lancet, March 20th, p. 635.

[1] The 1925 plague season has passed without a single case at either Mohammerah or Abadan, and only sporadic cases in Iraq.

*Plague.*

| | | |
|---|---|---|
| 1914 | | |
| Feb | Persian Gulf | Debai. *Lingah* One case removed from ship to quarantine |
| May | Persian Gulf | Basra: One case |
| June | Persian Gulf | Bahrein Island. |
| May | Russia | Baku. |
| Oct to Sept | Mesopotamia | Bagdad Kazimain, Kerbela, Bad kuba, Kizil Robat, Khanikin, Hillah. |
| Nov | Russia (Caucasus) | Moghan, Chakerlou. |
| 1915 | | |
| April | Persian Gulf | *Bunder Abbas* Three cases from Bahrein I. removed to quarantine. *Bushire* Three cases from Bahrein I. removed to quarantine |
| May | Persian Gulf | *Mohammerah* Three cases. |
| June | Mesopotamia | Basra. |
| 1916 | | |
| May | Persian Gulf | *Mohammerah.* |
| 1917 | | |
| April | Persian Gulf | *Mohammerah, Kharak I.*, Bahrein I |
| May | Persian Gulf | Mascat. |
| 1918 | | |
| April | Mesopotamia | Basra |
| 1919 | | |
| May to July | Mesopotamia | Bagdad Kazimain Kurna Kut, Mosaib, Hilla (523 cases notified) |
| 1920 | | |
| Dec. | Mesopotamia | Basra |
| | Russia | Sarakhs (Transcaspia) Suspected. |
| 1921 | | |
| Jan. and June | Kermanshah Province | Villages of *Maserat Bara* and *Chergha Narges* Very doubtful. |
| | Mesopotamia | 137 cases. |
| Dec. | Khorassan Province | *Chinaran* One case: very doubtful. |
| 1922 | | |
| May | Mesopotamia | Basra } 685 cases |
| June | Mesopotamia | Bagdad } 685 cases |
| | Persian Gulf | *Mohammerah* |
| 1923 | | |
| Jan. | Mesoptamia | Bagdad, Basra. |
| March | Persian Gulf | *Chahbar* |
| April to July | Persian Gulf | *Mohammerah* 71 cases, 45 deaths. |
| May to July | Persian Gulf | *Abadan*: 481 cases 409 deaths. |
| | Mesopotamia | Basra and Bagdad and intervening places: 708 cases 413 deaths. |
| Dec. | Persian Gulf | *Lingah* Four cases from Arab coast: removed to quarantine |
| 1924. | | |
| Jan. | Persian Gulf | Debai Bahrein Island. |
| | Mesopotamia | Bagdad Basra. |
| Feb | Russia | Astrakhan. |
| | Khuzistan Province | *Naseri*: Doubtful. |
| March | Persian Gulf | Bahrein Island |
| March to May | Persian Gulf | *Abadan* 223 cases. *Mohammerah*: 162 cases, 115 deaths. |
| April | Persian Gulf | *Kishm I.* imported. *Chahbar* Imported. *Geshut* Small village five miles from port of Ganaveh 17 cases, 14 deaths. Imported by pilgrims and labourers returning from Iraq by native craft. |
| May | Persian Gulf | *Bunder Abbas* 12 cases, 7 deaths: imported either in quarantine station or located by M.O. *Bushire*: One case quarantine station. *Lingah*: One case. |
| July 10th | | All ports of Persian Gulf declared free of plague. Disease practically at an end in Iraq |

threatened frontier, but also the best protected. Indeed, the country presents formidable natural obstacles to such spread. At the same time it has to be remembered that authorities have *described two plague* centres on the plateau, one in the mountains of Kurdistan (Tholozan), the other in Khorassan in North-East Persia. *They* have however, been quiescent for the last 50 years, nor have there been any cases at Enzeli or Rasht on the Caspian for a like period, nor in Khuzistan, to which province plague was brought from Mesopotamia in 1876. The mention of suspected cases near Kermanshah and in Khorassan (1921) arrests attention but there can be *no doubt that* the diagnosis was not correct.

Since the 'seventies plague has appeared in the interior twice. In 1904 in Laristan, imported *from Lingah* on the Gulf, an outbreak which quickly died out; in 1905 in Seistan, East Persia. The origin *of this* epidemic was obscure. It appeared among the lake-dwellers of the Helmund, and there was a good deal to be said for the ingenious theory of Captain Kelly, I.M.S., who suggested that wild duck (which are known to eat dead rats) brought infected fleas from Astrakhan, where plague was epidemic at the time, during their migration. The evidence given of an epidemic in 1912 in the Sheikh Jam district of Khorassan, and of the finding of a single infected marmot, was not, in the writer's opinion, satisfactory.

Then as to carriers. On the plateau there are no rats, but there are house and field mice and jerboas. In Khorassan there is a species of marmot allied to the Manchurian tarabagan, and called by the Russians by that name.[*] There are rats in the southern ports and on the Caspian. The writer believes that Persia's relative freedom from plague will continue, and that she is not likely to serve as a channel by which it may spread towards the west. The introduction of railways may, however, quite well alter matters. Pneumonic plague has been reported in Mesopotamia, a country which is likely to be linked up with the Persian railway system of the future, and to which several thousand Persian pilgrims go every year.

A significant incident occurred at Tehran in 1921. During the unloading of a motor lorry from Bagdad a rat was seen to jump out none the worse for its long journey.

*Cholera.*

| | | |
|---|---|---|
| 1914 | | |
| Oct. | Russia | Kherson, Dnieper Basin Bessarabia, Ekaterinoslav |
| 1915 | | |
| August | Russia | Baku, Alexandropol, Erivan, Julfa. |
| | Azerbaijan | *Tabriz* Russian soldiers extension from Julfa. *Maragha, Khoi, Marand, Salmas.* |
| Sept | Gilan | (Extension from Baku) *Astara, Enzeli, Khoman, Rasht, Manjil, Talesh.* |
| 1916 | | |
| May | Gilan | Disease lingered all winter and reappeared at *Enzeli*, whence it spread along main road to *Kazvin* and thence to |
| August | Hamadan | *Hamadan*, and towards Tehran |
| Sept. | Tehran | *Jaffarabad* and *Shahabdulazim* (six miles from Tehran) *Tehran*, 4 cases |
| Nov | Mazanderan | *Amol* and *Caspian shore.* |
| 1917 | | |
| June and July | Mazanderan | *Amol, Sari, Barfarush, Benderges Astarabad* |
| | Gilan | *Larijan, Yekshambeh Bazaar* |
| | Tehran | *Rudahin Demavend, Khar* |
| | Khorassan | *Meshed Germes Teppeh, Shahrud, Sabzewar* |
| | Seistan | |
| | Kerman | |
| | Fars | |
| | Khuzistan | *Mohammerah.* |
| 1918 | | |
| March | Gilan | *Astara, Enzeli, Rasht* (began among Russian soldiers). |
| April | Azerbaijan | *Kazvin Zenjan, Mianej, Ardebil, Tabriz.* |
| | Kurdistan | |
| | Kermanshah | |
| | Arak | *Kum, Sultanabad.* |
| | Isfahan | |
| | Fars | |
| | Yazd | |
| | Kerman | |
| | Russia | Turkestan |
| 1920 | | |
| | Mesopotamia | Basra (doubtful) |
| 1921 | | |
| | Russia | Baku |
| 1922 | | |
| June | Russia | Turkestan, Astrakhan, Baku, Lenkoran. |
| 1923 | | |
| August 3 | Khuzistan | *Abadan* (902 deaths) Spread to Basra and *Mohammerah* (55 cases) and Iraq generally as far north as Bagdad and lasted into the autumn (1583 cases). *Naseri* (2 cases), *Masjidi Suleiman* (2 cases) |
| Oct. | Kermanshah | *Sowmar, Kasr Shirin, Quraitu* (all on Perso-Iraqi frontier): 11 suspected cases |
| 1924 | | |
| June 7 | Khuzistan | *Abadan* One case |
| | Mesopotamia | Sporadic cases. |
| August | Russia | Astrakhan. |

Cholera is a much more anxious problem for Persia than plague. As far as she herself is concerned it can be definitely stated *that* there are no endemic centres in the country. It is the threat of introduction from outside that has to be feared, for, once having gained a footing, it is impossible to arrest. Here, again, the Persian Gulf ports, in constant communication with Bombay and Karachi, cause anxiety, but the coast is well protected, as was shown in the section on Public Health Services. The outbreak at Abadan in 1923, which led to a severe epidemic in Iraq, was started by a ship-borne case. The heavy pilgrim traffic through

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[*] This marmot has been identified at the Natural History Museum, South Kensington, as *Citellus fulvus parthianus.*

Kermanshah and Kasri Shirin to the Shiah Holy places in Iraq, makes the sanitary situation there extremely important. The last real epidemic of Asiatic cholera was introduced by pilgrims returning to Persia by this route (1904).

The sanitary situation in Russia, and the reluctance of its new rulers to declare the existence of epidemic disease, have been further causes of anxiety. It will be noted that most of the places named in the above résumé are in north Persia. The disease was in every case brought in from Russia, in (it is true) the troublous war period, when there was constant going to and fro of military detachments. The epidemics were of a singularly mild character. They meandered slowly from town to village and town along the caravan routes; lingered, perhaps, during a winter, and revived in the spring.

The epidemic of 1916 was an instance. It came in from Baku in September, 1915, through the port of Enzeli, and in May, 1916, began to spread slowly up the 250 miles of main road to Tehran. By September the villages west of and close to the capital were attacked, and on the 23rd it was reported from the small town of Shahzabdulazim, six miles due south. The disease had passed round the outside of a city of 230,000 souls. On the 27th four cases were notified in Tehran, and the diagnosis was confirmed bacteriologically by the writer. They had come from Shahzabdulazim before communications were cut.

The disease in southern and central Persia in 1917 and 1918 was due to spread from the north. It presented similar low virulence. It is interesting to speculate as to what would have been the military and political consequences of the epidemic in southern Russia in 1915 if it had been one of true Asiatic cholera.

*Typhus Fever and Relapsing Fever.*

Both these fevers are endemic in Persia, but during the last 11 years they have only once become epidemic. Ordinarily, the cases are few and far between. Thus, the writer spent ten years in the country before he saw a case of typhus; this, sadly enough, was his Russian colleague at Tehran, and a year later the latter's successor died of the same disease. Both were working among Russian soldiers. Cases were notified to the Sanitary Council as follows:—

| | | |
|---|---|---|
| 1914. | | |
| Jan. .. | Typhus fever .. | Hamadan (Jewish quarter). |
| Feb. .. | Typhus fever .. | Van. |
| 1917–18, winter of | Typhus and relapsing fevers | A widespread epidemic. |
| 1921. | | |
| Dec. .. | Typhus fever .. | Ardebil. |
| 1922. | | |
| Feb. .. | Typhus fever .. | Askabad. |
| April* .. | Typhus fever .. | Tehran (30 cases). |
| 1923. | | |
| April .. | Typhus fever .. | Astara. |
| June .. | Typhus fever .. | Meshed. |
| July* .. | Typhus fever .. | Tehran (7 cases). |
| July .. | Typhus fever .. | Daragez. |
| 1924. | | |
| Dec. .. | Relapsing fever | Tehran (11 cases).<br>Bakharz, Turbat-i-Shaikh, Iam, and Khaf districts and Khorassan province: A severe outbreak: nature not recognised until recrudescence in July, 1925. |

* To end of year.

The epidemic of 1917–18 followed two years of drought and famine. The poor were all heavily louse-infected.

A troublesome sequela of typhus fever, and one observed for two to three years after this epidemic, was necrosis of the rib cartilages

Much confusion was, and is still, caused when any attempts are made to collect mortality statistics, by the fact that Persians use the same name for both typhoid and typhus: *haspeh*, an Arabic word signifying "spotted." There are two separate words in Arabic: *motbegheh*, typhoid; and *mohregheh*, typhus.

As to relapsing fever, only three cases verified by the microscope had been brought to the writer's notice during the previous 12 years, and they were in such widely separated centres as Tehran, Isfahan, and Hamadan. The spirillum found during the big epidemic resembled that described by Obermeier. Salvarsan and its substitutes were the only remedies found effective. The writer has failed to trace a connexion between *argas persicus*, the "stranger biter" of the Persians, and the accepted form of relapsing fever. Cases of fever attributed to its bites, seen by him at Tehran, have, in several instances, proved to be malaria. He has produced spirillosis of fowls with specimens of the tick obtained from Mianeh, its historical home, but has failed to infect man.

*Influenza.*

Persia suffered severely in the pandemic of 1918–19.* Coming as it did after two years of scarcity and epidemics of typhus and relapsing fever, the disease caused a great number of deaths. Accurate figures were impossible to obtain, but estimates of the mortality in various towns ranged from 1 to 10 per cent. of the population, and in the country districts it was even higher. Those who had chronic malaria offered little resistance; thus a military post of Indian and Persian troops lost 31 per cent. of its strength, and another post lost 72 per cent. The effect of slow (caravan) and rapid (motor-car) methods of travelling on the rate of spread was marked. Since the epidemic there has been every autumn and winter a great number of cases of severe respiratory catarrh, especially affecting the trachea, and liable to pass on to bronchitis and pneumonia.

*Malaria.*

By far the most serious disease in Persia is malaria. It causes heavy mortality every year, and keeps the inhabitants of whole districts in a low physical condition, which makes them an easy prey to other infections, such as tuberculosis, pneumonia, or influenza. That this should be the case in the Caspian provinces (Gilan, Mazanderan, Astarabad) is not surprising. The Caspian Sea itself is 84 feet below sea-level. Along it there is a belt of rice, cotton, and marsh country varying from two to 40 miles in width, with dense forest. The forest climbs up the foothills of the Elburz range to the summer quarters, where the trees gradually thin out and finally the bare mountains of the Persian plateau are reached, running up to an average altitude of 10,000 feet. Great masses of clouds, carried by the prevailing north-west wind, are continually rolling up against this huge barrier to deposit their moisture. The rainfall is high, 50 to 60 inches. There are innumerable rivers, moderate temperatures, mist, perpetual dampness, and rank vegetation—in a word, all the conditions that go to make up a malarial country.

The people as a whole are anæmic and distressful looking. Their life would be an easy one were it not for the wild pig which destroy their crops. As it is their rice fields provide most of what they and their animals need; fuel can be had for the cutting, and food is cheap and abundant, including game, wild fowl, and fish. But for these aids to resistance one feels that long ago the clouds of mosquitoes would have been left the forests to themselves. In the summer quarters the writer found that 100 per cent. of the children under 10 years of age had enlarged spleens. It was the same in the low country. At Mahmoudabad, a beautiful spot on the coast, said to be a particularly healthy village and to be comparatively free from mosquitoes, 60 per cent. of the children in the school had enlarged spleens. The raised sleeping platform for the summer months is the only means of prevention in use. There are no doctors except in the few towns, and there is very little quinine. When used it is taken haphazard and stopped when the fever ceases. The writer intends to publish at a later date notes on the anopheline species found in the Kujur and Nur districts.

*Conditions on the Plateau.*

The Caspian provinces, however, form but a comparatively small part of Persia, and the short description of the great central plateau, where there is no rain between May and October, and the total fall is only 8 to 10 inches, would suggest comparative freedom from malaria. It is true that the central desert (Dashti Lut and Dashti Kavir) escapes, but everywhere else in the mountains and valleys and plains there are heavily infected districts, some as heavily infected as the provinces described above. Water storage and irrigation methods and the nature of the rivers provide the explanation. In towns such as Tehran every house and every garden has at least one tank for irrigation, domestic purposes, and religious ablutions. In addition, many houses have underground cisterns for storing drinking water, which are filled from surface channels. All these tanks and cisterns are so many breeding places for mosquitoes.

As regards the rivers on the plateau, most of them end in the desert, forming swamps. They are tapped by irrigation channels leading to the different villages in the district, and these give rise to secondary smaller swamps or collections of standing water. A notable instance in the Tehran province is the district of Shahriar, a very fertile region to the south-west of the town, which it supplies with corn, fruit, and vegetables. It is watered by a stream from the southern slopes of the Elburz. Of late years so many of the men have died that the villagers have petitioned the Government to do something for them. The problem is an engineering one, not of great difficulty, but for which there are no funds available. The big landowners are not far-seeing enough to take the matter up. A little quinine has been distributed, and much advice. There is a district named Khar to the south-east of Tehran, where a certain amount of rice is grown, and similar conditions prevail. The villagers are heavily infected and are sallow and lethargic, very different from the sturdy hillmen a few miles to the north.

It is the same everywhere on the plateau, in spite of its magnificent climate, and malarial centres may be found in varying degree of intensity, in the towns, in mountain valleys where suitable conditions hold, and in the plains where rivers debouch.

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* Loc. cit.

In the north-east there is much malaria in the province of Khorassan. In the north-west, in the Urumiah district of the province of Azerbaijan, an interesting change has come about as a result of the war. I have it on the authority of Dr. Packard, of the American Presbyterian Mission, that until the Turks invaded Persia malaria was rather rare and of a benign type. Since then it has become much more common and pernicious forms are frequently seen. In the west (Kurdistan, Luristan, Kermanshah, and Hamadan provinces) there is much malaria. The Marivan district of Kurdistan, for instance, where rice is cultivated, is particularly bad. In Khuzistan malaria is severe in the low-lying country along the rivers; the towns of Ahwaz, Shuster, and Disful are, however, little affected. In the south the Gulf towns are heavily infected. Malarial districts are found in the central provinces of Isfahan, Yazd, and Kerman, and in Fars. In the east, in Seistan and Baluchistan, malaria is not prevalent.

### *Malaria in Tehran.*

In the Tehran district, 3000 to 5000 feet above sea-level, with which the writer is most familiar, it is safe to say that few Persians escape infection at one time or another. The climate is so good, however, that a considerable measure of resistance is established, and chronic forms are not nearly so common as this statement would suggest. There are, nevertheless, districts, villages, and gardens, where malaria is particularly severe; none of the inhabitants escape, and many develop cachexia. Moreover, the district is in constant communication with the Caspian provinces through caravans bringing rice, charcoal, and milk products. Fresh infections begin to appear in May, and there is a great increase in the number of new cases, as well as of relapses, which begins at the end of July and continues during August and September. The mean average temperatures for these three months are: 81·24°, 79·81°, and 72·95° F. There are also years when, as in 1922, there is a great increase in the number and severity of the cases. It has been noted that such epidemics go with higher air temperatures.

All the three forms of malaria occur, but quartan infection is not common. The rise in the number of cases in August and September is almost entirely due to subtertian infection. The parasite is frequently associated with the benign tertian form. Pernicious attacks are frequently seen among labourers and the poorer pilgrims in epidemic years, resulting in coma, jaundice, and hæmorrhages. Hæmoglobinuria is extremely rare however; the writer has seen only one case in 19 years. All the usual complications of acute cases are seen, including a dysenteric form.

Chronic and relapsing malaria has to be constantly borne in mind in diagnosing and treating the most varied ailments. All the patients say they have had malaria; some have had dysentery or chronic bowel complaints. Persians in the towns are constantly taking quinine, and this practice often renders the diagnosis of acute fevers difficult, especially in the case of enteric, which not infrequently has an abrupt onset with rigors.

Persian doctors use inadequate doses of quinine, and a patient is rarely treated after the temperature has fallen. The custom of waiting until the temperature drops to normal before giving quinine is widespread, and is disastrous in the case of continuous pernicious forms. Another class of patient from whom quinine is withheld are pregnant women. The most intense and rapidly fatal cases of anæmia are seen among them. Administration of quinine by injection is far too common, and, unfortunately, the injection is frequently badly made. Patients, however, think that there is special virtue in the syringe, and *injectioon* has become a Persian word.

### *The Problem of Prevention.*

The malaria problem is a huge and difficult one. Individual effort is lacking, and prophylactic measures are not being taken by the Government, even to the extent of making quinine easily and cheaply obtainable. Even in the large towns where malaria is almost entirely "man made" (in Tehran entirely so), little or nothing is done. Indeed, in the capital the municipality has distinguished itself by constructing a series of small tanks from which the streets are watered, and which serve as additional breeding-places.

Shortly after his arrival in Tehran in 1900, the writer proved the efficiency of gold fish as larvicides after experiments made in the garden of the British Legation. Gold fish and mosquito larvæ are completely incompatible; they have never been seen together. Domestic ducks have been found of some use in clearing tanks, but frogs of none. The practice of keeping gold fish in tanks has steadily spread since then, but it is a long way from having become universal. Unfortunately, the gold fish have their enemies too—cats which wait patiently on the edge of a tank for a rise and crows which swoop and carry off young fry. If, moreover, the outlets of tanks be not protected with a strainer, fish will escape and be lost when the water is changed. With a proper sanitary organisation, furnished with police powers, malaria could be stamped out in towns like Tehran, where the only natural mosquito breeding-places are rare temporary collections of water the result of occasional storms, and the rest are entirely artificial and easily controllable. Personal prophylaxis is confined to the use of nets by the better-to-do classes, and the irregular eating of quinine for all and every indisposition and febrile disturbance.

The British and British-Indian forces on service in western and north-western Persia in 1918 and 1919 suffered severely from malaria. Had the advice of local practitioners been sought in advance they would not have failed to urge the adoption of prophylactic measures.

The following species of anopheline mosquitoes have been found at Tehran: *A. maculipennis*, *A. plumbeus*, *A. bifurcatus*, *A. pyretophorus*. They are distributed in a curiously irregular way, and are much easier to find outside the city than in it. A certain room was found one summer to be harbouring large numbers of anopheles. All the possible near-by breeding-places were excluded, and at length a newly-formed hidden one was found where an occasional water channel disappeared under ground and had scoured out a pocket. The next summer, during a corresponding period of seven weeks, 185 culex and only three anopheles were caught in the same room. Culex larvæ have been found in the Elburz range north of the city at an altitude of 9000 feet.

### *Tuberculosis.*

That tuberculosis in all its forms is steadily increasing in Tehran, as well as in other towns, is a frequently expressed opinion. It is seen also in the villages as well as among wandering tribes. The reasons for this are: (1) Overcrowding in the towns. (2) Absence of ventilation in the houses. (3) The use of wadded quilts which are never washed and which go from one person to another. (4) Ignorance of methods of prophylaxis. So great is the dread of the disease that knowledge of their condition is kept as long as possible from the afflicted. (5) Underfeeding and malaria. (6) Late diagnosis. The Persian's resistance is small, and it is doubtful if he ever recovers in his own country from the pulmonary form. Bone and joint disease is very common in spite of the fact that milk is never drunk unboiled. There are no means of isolating "open" cases. The treatment of surgical tuberculosis is very far behind modern requirements and hospital accommodation is lacking. The dry air and abundant sunshine make the plateau an ideal place for heliotherapy.

### *Venereal Disease.*

Venereal disease is widespread among all classes. The following points only will be noted.

Though gonorrhœa is generally insufficiently treated, and chronic urethritis its usual sequel, stricture of the urethra is not at all common. Gonorrhœa is a cause of much sterility. Syphilis is, on the whole, of a mild type, and attacks the cardio-vascular system, the nervous system, and the skin with nothing like the same frequency as in Europe. Aneurysm is one of the rarest clinical conditions seen, and general paralysis is also very uncommon. Hereditary syphilis is curiously infrequent in face of the great amount of the acquired disease seen.

### *Small-pox.*

Small-pox is endemic in Persia. There have been no big outbreaks during the period under review, but prevalence has been reported from numerous scattered districts. In 1920, and again in 1922–23, reports of this nature were received. That the disease has greatly diminished in the districts served by the public vaccination service is certain, but unfortunately there are no statistics to support this statement. In Tehran during the last four years, 370 deaths from variola have been reported—not an excessive number in an Eastern city of some 230,000 inhabitants.

### *Leprosy.*

Leprosy occurs in the provinces of Khorassan, Azerbaijan, Gilan, Kermanshah, and Kurdistan. Little is done in the way of care beyond making the advanced cases live in villages by themselves, and that in the two first-named provinces only. There they cultivate the soil and receive an allowance of corn from the Government. Their families accompany them. The disease does not, however, appear to be increasing. There is only one leper village in the populous province of Azerbaijan, for instance, and it contains only some 35 cases, a number which remains fairly constant. Not all the lepers in the province are in it, however, for people in the early stages may be seen elsewhere. Nothing would appear to prevent lepers leaving their districts and moving about the country if so minded, and cases from distant parts, and not all of them in the early stages, have been seen in Tehran. Persia was represented at the International Conference on Leprosy held at Strassburg in 1923.

### *Other Infectious Diseases.*

*Amœbic dysentery* is endemic. The bacillary form (Flexner) occurs at Tehran and, no doubt, elsewhere. No epidemics have been reported in the period under review.

The *enteric group* of fevers is endemic, but does not cause as much illness among Persians as the sanitary conditions in which they live would suggest. They believe themselves to have acquired a considerable degree of immunity through long drinking of contaminated water, and it is a very reasonable supposition. Fifteen years ago enteric fever was common in the scattered European colonies. Now, as a result of efficient inoculation, it is rare. There is a spring and an autumn rise in the number of cases, but no severe outbreaks have been reported.

*Sprue* occurs in Persia. Foreigners, Europeans, and Americans provide most of the cases. Good results have been reported from treatment with calcium salts and parathyroid gland.

*Encephalitis Lethargica.*—The writer reported a case from Tehran in January, 1922, and since then has seen two other acute cases. A number of cases of "Parkinsonisme" in young adults have, however, been seen both at Tehran and Isfahan. They came almost altogether from the country districts between the two towns. Cases of epidemic hiccough were seen at Tehran during the winters of 1923 and 1924.

*Anthrax.*—Infection of the skin is very common, and every summer there are larger or smaller outbreaks, generally in the villages. It seems to be a singularly benign disease in Persians. A well-digger, with a huge pustule on his face, has been known to walk three miles a day to and from his work and attend hospital for his dressing on the way. Anthrax in animals will be noticed in a later section.

*Leishmaniasis.*—Leishmania tropica, called by Persians *salek*, the diminutive of *sal* (year), is very common in some districts and does not occur at all in others. In Tehran, for instance, it is rare to see a Persian who has not had it; in Tabriz it does not exist. There is no lack of sand-flies in either city. Infection generally takes place in the autumn. Street dogs in Tehran and other places are often seen with the ulcers of the disease on their faces, generally on the nose, lips, or eyelids. A case of general infection (canine kala-azar) was found by the writer at Tehran, but he has not seen a human case. Though Europeans living in the city of Tehran are not seldom infected with *salek*, the writer, during 19 years residence in the grounds of the British Legation, has had only one member of the staff to treat—this although the houses have no immunity from sand-flies nor the numerous dogs from *salek*. The dogs have, however, always been shut up, and their sores destroyed with the actual cautery as soon as their nature has been settled by a microscopic examination. The police have been encouraged to destroy street dogs with sores, but not officially or with invariable success. These points are mentioned merely on account of certain gaps in our knowledge of the ætiology of leishmaniasis.

*Trachoma.*—Trachoma is widespread and a great cause of suffering and blindness.

### *Epizootic Diseases.*

Persia has suffered severely of recent years from outbreaks of disease among flocks and herds.

*Cattle Plague and Anthrax.*—In 1919 there was a widespread outbreak of cattle plague, which was particularly severe in the Tehran district and in the province of Fars. The diagnosis was confirmed by English and Swedish veterinary surgeons. Captain Lawrence, R.A.V.S., on service in Iraq, was, at the request of the Persian Government, authorised to visit the Kermanshah, Hamadan, Kazvin, and Tehran districts. He made a report and detailed recommendations. Subsequently, severe outbreaks were reported as follows:—

| | | |
|---|---|---|
| 1920 .. | Cattle plague .. .. | Tehran, Khonsar, Kerman, Hamadan. |
| | Anthrax .. .. | Tehran. |
| 1921 .. | Anthrax .. .. | Tehran. |
| 1922 .. | Anthrax .. .. | Hamadan, Kurdistan, Dehkurd. |
| | Cattle plague .. .. | Mazanderan, Kermanshah. |
| 1923 .. | Cattle plague .. .. | Hamadan, Kurdistan, Tehran, Gulpaigan. |
| | Anthrax .. .. | Mazanderan. |
| 1924 .. | Cattle plague and anthrax killed thousands of animals in the Tehran, Hamadan, Isfahan, and Sultanabad districts. The losses to landlords and peasants were very heavy, and the autumn ploughing could not be done in places. | |

Persia is essentially an agricultural country, and each province is largely dependent on itself for its food-supply, on account of the high cost of transport. The problem as to how to deal with these ever-recurring epizootics has become most urgent, and it is rendered doubly difficult by lack of funds. The Pasteur Institute at Tehran has shown the efficacy of prophylactic inoculation against anthrax, but has not had the means for carrying it out on a really large scale. (In 1924, 60,000 inoculations were done in the Tehran neighbourhood, and 4000 army horses were protected.) In view of the country's financial difficulties, it would appear profitable for the great landowners to finance the Institute for this part of its work, but they have not done so. The Persian Government has now decided to engage a French veterinary surgeon, and has voted £6000 for starting a veterinary service and institute.

*Glanders* is common in Persia, especially in the cities. In Tehran, where there are cavalry regiments, hundreds of two-horse cabs and a horse tram service, to say nothing of privately-owned horses and thousands of transport mules and donkeys, little is done outside the army in the way of prophylaxis. The writer has seen several human cases, all rapidly fatal.

(*To be concluded.*)

## CORRIGENDUM.

*To the Editor of* THE LANCET.

SIR,—May I trouble you to correct a mistake in the notice *re* the Status Lymphaticus Investigation, printed in your issue of March 6th, p. 506, for which I supplied information. The interim report of the original investigation was published in the *Journal of Pathology and Bacteriology* for *January*, 1925, not April, 1925.

I am, Sir, yours faithfully,

W. HOWEL EVANS,
Secretary.

Liverpool, March 10th, 1926.

## ARSENIC IN APPLES.

To the current number of the *Analyst* a paper is contributed by Dr. H. E. Cox, public analyst for Hampstead, who examined apples which were the subject of recent prosecutions. He points out that Dr. Voelcker's experiments at Woburn have shown that vegetables grown in arsenic-contaminated soil do not contain arsenic and he also states that there is clear evidence that arsenic is not natural to apples. The presence of lead with arsenic in or on the apples is fairly conclusive evidence as to the source. Dr. Cox found that 48 hours after spraying the interior of the sprayed apples contained from 1·3 to 3·3 parts per million of arsenic. It is unlikely that rain would remove all the lead arsenate from the surface of apples, but it appears that washing and rubbing in 2 per cent. caustic soda solution would do so. In the discussion which followed the reading of this paper before the Society of Analysts, sympathy was expressed with English retailers, as well as some curiosity as to the law in America regulating the use and sale of poisons. Opinions as to the efficacy of washing were varied.

## IRRITATION THERAPY.

WE have received a long communication from Prof. Dollken of Leipzig entitled "Vaccineurin: a Neurotropic Remedy." The paper proposes to show that non-specific agents may irritate the cells of affected organs, and thus bring about a reactive inflammation mobilising the curative agents of Nature to restore the normal functions of the cell. The definite irritation bodies which have in practice proved efficient in this way as a remedial agent for certain affections are some colloidal metals, milk injections, typhoid vaccine (in its American use for arthritis), and turpentine. Prof. Dollken holds that a preparation now produced at the Serum Works of Saxony, Dresden, under the name of Vaccineurin is of powerful therapeutic efficiency in this way. He describes it as an "autolysate of bacillus prodigiosus and staphylococcus mixed in a definite ratio," and considers his theories to be confirmed by successes in a large number of cases treated—the manuscript mentions 100,000 cases yearly, but this may be an error of typing. The injection can be made either directly into the blood circulation—the cubital vein is suggested as the site—or given intramuscularly, when a dose of 1·5 c.cm. of the solution produces a hardly noticeable local reaction. The pain of a neuralgia will thus be moderately increased either in intensity or frequency for some hours, but after every succeeding injection the reaction grows, it is stated, less intense. The treatment is recommended for various forms of neuralgia, the primary cause being considered irrelevant, and details of a number of successful cases are appended to the paper. As the treatment appears not to be dangerous within the suggested dose, a trial might be made of the preparation, but in view of the suggestion of the small part which ætiology plays in the theories for its employment, the desirability becomes obvious that these theories should be discussed by expert pathologists. We do not gather that Prof. Dollken has submitted his views to any scientific medical jury.

# Lumleian Lectures
ON
# ENDOCARDITIS.

*The First Lumleian Lecture in 1926, delivered before the Royal College of Physicians of London on March 23rd,*

BY SIR THOMAS HORDER, BART., K.C.V.O., M.D., F.R.C.P. LOND.,
PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

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MR. PRESIDENT, FELLOWS, AND GENTLEMEN,—My first and pleasing duty is to thank you, Sir, and the Censors of the College, for the honour of my appointment to the post of Lumleian lecturer. The gratification which I feel is tempered by humility when I recollect the long line of distinguished Fellows who have held this lectureship, a line which includes the illustrious name of Harvey. A man of my temperament must needs be appalled by such knowledge, and though my mind is thrilled by the thought that the subject which I have chosen for these lectures is not distantly related to matters which the greatest of our Fellows illumined by the light of his genius, I tremble at another thought—my incapacity to prove myself worthy of your choice. Indeed, I am ready to acknowledge that at the close of these lectures even the most generous of my hearers may find it a difficult task to credit me with casting a glimmer into the darkness that hides so much of the subject-matter with which I propose to deal. I shall be satisfied if a few of my audience, still generously disposed, may feel helped by reconsideration of old facts, by a frank effort to discriminate between what we do, and what we do not, know, and by the exercise of some care in suggesting how the present gaps in our knowledge may perhaps be filled, whether by clinical observations or by laboratory research. I shall resist the vanity of trying to say all that can be said on so large a subject, rather contenting myself by selecting certain features which overlap with my personal experience and reflections.

It may be advanced that in these days, when more exact knowledge of the inflammatory changes taking place in the heart as the result of rheumatic infection has led us to the realisation that the lesion produced is a pancarditis rather than an endo- peri- or myocarditis, the subject of endocarditis has become one of secondary importance. But given this concept of the effect of the rheumatic virus upon the heart, there has arisen, pari passu with its recognition, a growing interest in another type of heart infection in which, as is generally admitted, the brunt of the invasion and of the interaction between the infecting agent and the tissues certainly comes upon the endocardium. I refer to that group of infections which is for the nonce termed "bacterial." Of the growing importance of this type of endocarditis, which, but for the objection of adding one more name to a nomenclature already overburdened, might justly be called in contra-distinction to the rheumatic type "endocarditis vera," we are all fully aware. I shall ask no indulgence for making it the main purpose of these lectures, nor for bearing it constantly in mind when dealing with other types of endocarditis, with one and all of which it has important relations.

I know of no classification of cases of endocarditis which is scientific and therefore none that is helpful. Nor do I propose to offer one. If it be true that to have overcome the desire to classify is to have attained a little wisdom, then, in this matter, I have attained a little. A mere recital of the known infecting agents causing a morbid condition is not a classification, and in the case of endocarditis such a recital must perforce at present find the cause of the majority of cases lacking. I propose to proceed without a classification. I shall deal first with endocarditis as it results from rheumatic and syphilitic infection. I shall then consider the influence upon the endocardium of certain factors which are not, so far as we can judge, microbic. I shall follow this by a statement of our present knowledge of so-called bacterial infections, and I shall conclude by considerations of pathogenesis, prognosis, and treatment.

### RHEUMATIC ENDOCARDITIS.

It was in the course of his Lumleian lectures in the year 1891 that Sturges preached the doctrine of rheumatic carditis. Sturges's subject was Heart Inflammation in Children, and he laid emphasis upon the fact that rheumatic heart affections in children were almost always both endocardial and pericardial. Although he noted the frequency with which the myocardium was also involved, he thought this occurred as the result of the pericardium having become adherent. This idea was probably a survival of the teaching current before this time and indeed still prevalent at the time of Sturges's lectures. In Fagge and Pye-Smith's excellent text-book, in the edition appearing three years prior to Sturges's reference, occur the words, "There is no true carditis as there is no true inflammation of the brain. The inflammations of the heart do not directly concern the muscle, but the covering and the lining membranes." When this was written careful histological examination of the myocardium in rheumatism had not been undertaken and, I might add, encephalitis was not prevalent.

It is significant of the slowness with which ideas, however lucidly stated, and however logically supported, gain permanent and practical acceptance in medicine, that the doctrine so ably advanced by Sturges, 32 years ago still requires, and receives, reiteration to-day. The growing conviction of clinicians that the heart was seriously involved as a whole, and from the first, in most severe cases of acute rheumatism, coincided with more critical investigation into the state of the heart wall in fatal cases; the discovery by Aschoff of the nodes which bear his name, and the confirmation of these and other changes by many histologists, put this conception of the unity of the cardiac inflammation in this disease upon a firm basis.

Norman Moore, the Lumleian lecturer in 1900, when treating of Rheumatic Fever and Valvular Disease, advanced the view that the endocarditis of acute rheumatism was the "central condition in the disease." According to Norman Moore, "endocarditis is always present" in acute rheumatism. "The conclusion to which I wish to attain," he says, "is that every case of rheumatic fever, whether the pains in the joints are slight or severe, is a case of endocarditis, and that the condition of the endocardium is not to be regarded as a frequent complication, but as the essential and invariable feature of the disease." Again, "If no evidence of endocarditis is to be found throughout an illness of which a symptom is arthritic pain, then that illness is not rheumatic fever, and the arthritis has some other cause." According to the view the various peripheral expressions of the rheumatic infection, such as arthritis, the cerebral symptoms, the lesions in the skin and subacute tissues, &c., are secondary to the heart affection. Whether he considered the mechanism by which these peripheral symptoms arose to be by a process of embolism or no Norman Moore did not say, but quite recently Krogius has taken this view, considering the symptoms in both acute rheumatism and in gonorrhœal rheumatism to be metastatic in nature. The alternative conception, of a virus which invades the blood stream and exercises a special affinity for heart muscle, serous membranes, subcutaneous tissues, skin, and certain parts of the brain, so that more or fewer of these structures are involved structurally and functionally at the same time seems rather more probable in the case of acute rheumatism.

Be the mechanism of the infection what it may, we have become satisfied concerning two points in relation to heart affections incident upon acute rheumatism: (1) That there is involvement of the heart in so great a proportion of the cases that it is wise to assume that it may be involved in all, and this even in the absence of any direct evidence by physical signs. (2) That the inflammation, especially in children, is of the nature of a carditis.

### *The Clinical Picture.*

Carey Coombs complains that the subject of rheumatic heart disease is still divided up in even the most recent text-books under all sorts of headings and is therefore only dealt with "in scraps" rather than as an entity, possessing a specific cause and presenting a clear clinical and pathological picture. This complaint seems reasonable and the great importance of the matter justifies the strenuous and repeated efforts of this author, as also those of Poynton, an earlier worker along similar lines, to get recognition of the facts as we now know them.

Of the other relations existing between acute rheumatism and endocarditis there is little or nothing to add to the facts as established many years ago. It is a little humiliating, for example, to read again the conclusions drawn by Church just 40 years ago from his examination of 700 cases of the disease, an analysis which is still quoted in the manuals. True, his estimate that only one half of the patients affected had some heart affection in their first attack has been considered too low, as seen by my reference to the views of his colleague Norman Moore, but Church's other conclusions have received confirmation down to the present day. For example, he said that the heart, when affected, is usually implicated during the first week of the attack; that the liability to cardiac involvement diminished with age; that no system of treatment, whether by drugs or otherwise, had, until then, been shown to influence the tendency to endocarditis in acute rheumatism; that relief from pain and fever occurred four or five days sooner in patients treated by salicylates than in those not so treated. It is doubtful if an analysis of the last 700 consecutive cases of acute rheumatism at the same hospital would lead to any different conclusions. Some things, however, which mere statistics could not show, would, I think, strike the thoughtful investigator if he took trouble to study individual records rather than merely to catalogue the main results. There seems little doubt that cases of severe acute endocarditis during the first attack of the disease are less common than formerly. Further, and perhaps explaining the fact, rheumatic fever in the severe form which was so common even 25 years ago, is not at all a common disease to-day. Is it not rather uncommon to see a young man, either in hospital or in private practice, presenting the picture of severe rheumatic fever? Yet such cases were an almost daily experience a generation ago. The hyperpyrexial form of the disease, and cases in which cerebral symptoms were a striking feature, seem entirely to have disappeared. Church, in the analysis just quoted, refers to the fact that already both pericarditis and lung complications had even at that time become much less frequent, and he adds with caution that it remained to be proved whether this was due to salicylate treatment or to other causes. After 40 years I fear that we must add that we still do not know. May it not have been even then due to some change in the interaction between the virus and the tissues resulting from a change in the virulence of the infecting agent? Or to some change in the resistance of the tissues infected? And may not the continued tendency, since Church's analysis was made, for pericarditis, and especially pericarditis with liquid effusion, to become less common, together with the lessened severity of the cases of acute endocarditis, and of rheumatic fever generally, be expressions of one or both of these same changes?

Following the line of thought introduced by Swift, who refers to two distinct types of response on the part of the tissues to infection by rheumatic fever—the proliferative and the exudative—we should say that the facts just mentioned suggest that exudative changes have become less common, whereas proliferative changes have remained as frequent as before, or have perhaps tended to increase in frequency. I shall refer again later to the relative infrequency of a first attack of acute rheumatic endocarditis in young adults. The possibility of a more complete resolution taking place in a valvulitis at this age, provided no further infection takes place, then in children, in whom the valve cusps are exceedingly thin and delicate, must not be overlooked.

But with this change in the character of the disease we call acute rheumatism or rheumatic fever, so that its more severe forms, and the coincident forms of acute endocarditis and pericardial effusion, have become much less common, there has probably occurred an increased frequency of the subacute and chronic forms of the infection, together with subacute and chronic endocarditis. I have not the benefit of a large experience at a children's hospital, yet I gather that this statement applies equally to children as to adults. It is constantly treated by those who see many ill children that rheumatic heart disease frequently arises in the absence of arthritic signs or indeed of any signs other than those indicative of the carditis. Although this fact was well known to physicians 40 years ago, the number of cases of rheumatic heart disease found in children who present no other feature seems now to bear a larger percentage to the whole than formerly.

### *Types of Resultant Lesions.*

Let me turn now to a consideration of the types of endocardial lesions which result from rheumatic infection, whether acute, subacute, or chronic. In the first place let me trace the course of a mitral endocarditis set up during an attack of rheumatic fever as closely as the known facts will allow. Since we must regard the inflammation as being essentially a valvulitis, a point emphasised by Swift in his recent studies, it is difficult to see how complete resolution can take place in so delicate a structure once it has been inflamed in the particular manner we know to be characteristic of rheumatism. It is probable, therefore, that few, if any, cases escape some degree of resultant injury. It is also probable that the conservative estimates of the earlier observers, such as Church, relative to the frequency of involvement of the heart valves in rheumatism, and also to the proportion of complete recoveries, is explained by the fact that the estimates were made at too short a period of observation after the attack. It was known that the systolic bruit, so frequently present during the attack, not infrequently disappeared for a time and then reappeared, but it is likely that many cases, and especially hospital cases, upon which almost entirely statistics are based, were registered as being free from valve mischief during this very interval when there were no signs of heart disease. Kemp, as the result of a careful analysis of cases of acute rheumatism in Radcliffe Infirmary, concludes that these older estimates of the incidence of heart affections and of subsequent damage were correct. He also concludes that much that was termed endocarditis in acute rheumatism was really myocarditis, and largely recoverable.

What were the recognised results of the valvulitis caused by acute rheumatism other than the hypothetical recoveries? They were three: (1) Cicatrisation takes place, leaving the valve cusps deformed and shrunken, but eventually settling down into permanent shape and remaining so for a long time, it may be many years, until some other factors come into play to disturb the compensating mechanism in the heart. To this condition the term "mitral incompetence" was given. (2) Further and frequent attacks of rheumatic infection may enhance the damage and increase the valvular defect. The resultant state of the mitral orifice imposes more difficulty upon the circulation, embarrassed further by associated changes in the mural endocardium, in the myocardium, and perhaps also in the pericardium, attendant upon the repeated invasions of the virus. The net result of this recurring type of acute rheumatism was the production of what was termed "double mitral disease." (3) The third alternative sequel was the gradual, or rarely the rapid, transition of the case into one of the ulcerating type of endocarditis. Of this sequence more anon.

### *Valvular Incompetence or Stenosis?*

What was the recognised result upon the mitral valve of rheumatic infection with more insidious and more chronic symptoms—"growing pains," mild chorea, myalgias, and various fibrositic manifestations? Although it was believed that any of the cases in this group might develop mitral incompetence with or without stenosis, there was a general belief that the net result was likely to be the production of mitral stenosis, with little or no regurgitation. I speak here of tendencies and of average results merely, not of absolute or universal findings. The more purely regurgitant a mitral lesion was found to be the more likely was it that the patient had had an acute attack of rheumatism and one attack only, or, if more than one attack, then with intervals of some years between the attacks. The more purely stenotic the mitral lesion was found to be, the more likely was it that the patient had never had an attack of acute rheumatism, but had had some mild rheumatic manifestations of the chronic kind just mentioned, or gave no history of any rheumatism at all. Looked at from another angle, the type case of mitral incompetence was an adult man who had had a severe but single attack of acute rheumatism in his teens. The type case of double mitral disease was a child or young adult, who owed the defect to repeated attacks of rheumatism, largely subacute, and who had considerable myocardial damage in addition. The type case of mitral stenosis was a middle-aged woman who rarely gave a history of acute rheumatism, and often gave no history of rheumatism at all.

How do these views compare with current ideas as to the resultant valve changes following rheumatic infection? There has been of late years a tendency to consider mitral incompetence a very uncommon sequel to acute rheumatism; indeed, many cardiologists of the present day have discarded the term altogether, or use it only to signify patency of the mitral orifice resulting from cardiac dilatation, temporary or permanent. When faced with a patient who presents signs of what others would term cardiac hypertrophy with a blowing systolic bruit transmitted to the axilla and a diastolic interval free from both bruit and thrill, they explain the state of affairs by postulating a diseased myocardium and a dilated mitral ring. And when dilatation of the heart arrives in such a case they read this to be due to failure of the myocardium originally and permanently damaged by rheumatism rather than due to inability of the hypertrophied ventricle to compensate further for the regurgitation. Others wander still further from the old conception, and, feeling so certain that the end-result of rheumatic mitral valvulitis is more or less of mitral stenosis, they actually apply this latter term to cases presenting the signs just mentioned. So the apparent anomaly arises, that of two physicians who examine the same case, one will label it "mitral incompetence" and another "mitral stenosis." All this is much to the confusion of the student's mind. Without, as yet, the help of proper figures to guide me, I think it is true to say that post-mortem experience favours the view that mitral incompetence due to old rheumatic endocarditis is much less common than it formerly was.

### *A Paradox.*

It is not so very important that such a paradox arises as it is that the circumstance denotes very definitely a changed conception in the rheumatic process. The change is far-reaching in its effect upon our attitude towards post-rheumatic hearts; it is only as yet partly reflected in the text-books and in the routine teaching of the schools. It is, I think, of more than academic interest to inquire if this change be due to more careful and more prolonged observations carried out upon hearts affected by rheumatism or to an actual change in the material observed. That our predecessors were not less skilled than we are with their hands and ears scarcely admits of doubt. And certainly they gave as much time to thought on all these matters. Moreover, be it noted, the particular point is not one upon which either X rays or instrumental methods have thrown much light. It is, however, possible that the opportunity for continued and prolonged observations upon large numbers of cases of heart disease has been greater during the post-war period.

I am as yet uncertain which of the two explanations I have offered for this change of attitude is the correct one, or whether it be each explanation in part. Auricular fibrillation has been the subject of so much attention of late years, and is so intimately bound up with heart failure in mitral stenosis, that there is possibly an added factor here in concentrating the mind upon this particular condition. Put briefly, the changed conception resolves itself into this—that very much of the life-history of the rheumatic heart may be expressed by the term "chronic rheumatic valvulitis." There certainly seems much reason in disallowing that the progressive sclerosis which goes on in the mitral cusps and adjacent endocardium, up to the production of the "button-hole" mitral orifice, is merely a slow residual contraction after an initial injury. That some chronic and persistent irritant is still at work through long periods of time seems certain. But is that irritant the rheumatic virus?

### *"Pure Stenosis."*

The occurrence of "pure mitral stenosis" in women who give no history of any illness prior to the development of cardiac symptoms has always been a puzzling fact. And remains so to-day. An analysis of the last 100 cases of pure mitral stenosis admitted to St. Bartholomew's Hospital shows that 76 were females and 24 were males. In 63 out of the 100 cases there was no history of acute rheumatism, and in 36 out of the 100 cases there was no history of rheumatism or of any allied condition. Of these 36 cases 27 were women and 9 were men. In a careful analysis of 50 cases of mitral stenosis in soldiers Cotton found a history of acute rheumatism in 22 only. French observers have considered that the condition is a congenital one—that is to say, that it begins as a congenital defect, and that this increases as time goes on. Dieulafoy, commenting upon the frequency of, and the unique features presented by, this form of valvular disease, says, "It is sometimes associated with congenital malformations" (but he does not cite instances of this). "It is independent of rheumatism and the other causes which usually give rise to endocarditis. This stenosis is associated sometimes with chlorosis." But we in Great Britain do not seem to have found this association any more than we have found Virchow's hypoplasia of the aorta in this connexion. There has been an effort made by other French observers to associate mitral stenosis with tuberculosis, not so much directly as indirectly, through tuberculous toxins. But this view, again, lacks confirmation. Poynton drew attention to the constancy with which renal sclerosis was found post mortem in association with these cases of advanced mitral stenosis, and it is interesting to reflect that it is in the same sex, and about the same age, that another mysterious sclerosing lesion appears in type form—namely, the so-called "contracting white kidney." Until we know more of the specific cause of rheumatism we do not seem likely to get nearer to the solution of the problem of this special form of mitral sclerosis. At present it is impossible either to assert or deny that these cases are the result of the specific action of the rheumatic virus. The fact that the specific histological lesion of rheumatism is not found in them certainly must not be taken as excluding the possibility of their being rheumatic, for the chronicity of the process and the fibroid nature of the changes in the valve segments would, by analogy with other chronic infections, explain this fact. We do not (readily) find gummatous formations in parasyphilitic diseases, nor tubercles in fibroid types of tuberculosis. Moreover, it is not easy always to demonstrate Aschoff's nodes in some cases of carditis in which, on all other grounds, we have no reasonable doubt that the infection is rheumatic. Whatever the ætiology of mitral stenosis in its extreme form in adults may be, it seems certain that the proportionate incidence of chronic sclerosing endocarditis is greater than it formerly was. It is tempting to associate this fact with that other fact to which I have referred—the decline in the incidence of severe acute rheumatism and a relative increase in mild and recurring cases.

Of the endocarditis occurring in scarlet fever I will only say this—that there seems to be a proportionately greater tendency for aortic involvement than in the case of acute rheumatism, a point to which I shall refer again.

### SYPHILITIC ENDOCARDITIS.

The affections of the endocardium due to syphilis are probably less difficult to define than in the case of rheumatism. We know that the part most often affected is that of the aortic cusps, and we also know that such affection is in most cases part of an aortitis. Syphilitic disease of the aortic cusps leaves these delicate structures fibrosed and contracted, leading to aortic incompetence and its various sequelæ. Rheumatism affects the mitral much more often than the aortic cusps, and probably affects the aortic cusps alone quite rarely. The converse is the case with syphilis. It is generally held that the mitral cusps are not affected at all by syphilis, but I have been struck by the not infrequent presence of a well-marked apical systolic bruit in cases of parasyphilitic disease of the central nervous system and in the absence of any history of rheumatism. The bruit has been musical in character in some cases, a feature which makes it unlikely that the murmur has been due to mere dilatation of the mitral ring. I am not here referring to cases in which aortic disease is present, and in which, therefore, there might be secondary changes at the mitral orifice.

We owe to Warthin a very complete investigation into the changes induced in the heart and aorta by syphilis. Warthin's studies make it clear that these changes are both diffuse and focal, and we cannot but be struck by the resemblance in many points between the mode of attack of syphilis and of rheumatism. In both infections there are produced proliferative lesions, largely perivascular in nature, with nodal structures which are recognisable histologically. There is some not distant resemblance between these nodal lesions in the two diseases, so that it is a little strange that the likeness between the Aschoff bodies in rheumatism and the small gummata in syphilis of the heart has not led oberwers to consider if the virus of acute rheumatism may not be spirochætal in nature. Warthin and others have pointed out that the *Treponema pallidum* is sometimes demonstrated in large numbers in the myocardium, even when there are none to be found elsewhere in the body. So far as the endocardium is concerned, the typical lesion of syphilis is undoubtedly a mesaortitis affecting chiefly the base of the aorta, which includes the sinuses of Valsalva, the roots of the aortic cusps, and the part of the aorta just above these structures. No doubt in many instances the process includes a true aortic valvulitis. The disease is prone to be very latent, so that our evidence of its actual incidence, in terms of frequency, can only be [illegible]irectly. The sources of this indirect evid[illegible]: (1) Patients occasionally come under observation with symptoms which render a diagnosis of syphilis of the aortic ring extremely probable, and they respond well to antisyphilitic treatment. I shall return to these later. (2) Aortic incompetence in men about the age of 40, who give no history of acute rheumatism or of any other infective process likely to cause endocarditis, and whose blood gives a positive complement-fixation test for syphilis, is quite common. We seem justified in regarding these cases as residual after old syphilitic disease of the aortic cusps, or, indeed, as being still the subjects of aortic syphilis. (3) In the post-mortem room we frequently come across undoubted evidence of syphilitic disease of this region of the aorta which has not been suspected during life. This may be because death has been sudden or because the actual damage to the aortic cusps has not been so severe or so prolonged as to lead to symptoms. The extreme latency which is so marked a feature in syphilitic disease of the aorta was strikingly illustrated in the case of a policeman admitted to St. Bartholomew's Hospital. His age was 32 years. His history was to the effect that whilst assisting a fellow constable to lift a corpse down a flight of stairs his companion, who went before, slipped on a step and fell. The patient, in order to save himself from falling also, leant back heavily, still holding on to the dead body. At the moment that he did this he felt a sharp pain in his chest and felt faint. He was assisted downstairs and to the open air, sat down, and soon felt better. However, he was sent home, and still feeling queer he went to bed. His wife, who was out at the time of his arrival, returned and brought him some tea. As he was taking this he saw his wife looking about the bedroom as though searching for something, and, on inquiring what it was, "I was looking for the cat," she replied. She then explained to him that she could hear the cat purring. However, no cat could be found, and the woman discovered, to her surprise, on approaching the bed more closely, that the purr proceeded from her husband's chest. The pain from which the patient at first suffered had gone completely in three or four days; he was kept in bed for ten days and then sent by ambulance to hospital. When seen, the bruit was still very loud and could be heard distinctly by leaning over the bed, it being not necessary for the observer's head to touch the chest wall. The murmur was highly musical in character and was diastolic in time. There was no evidence of cardiac hypertrophy, but there were the usual arterial signs of aortic regurgitation. A fairly marked anæmia was present and a "triple plus" Wassermann reaction. There was a history of syphilitic infection ten years previously. The patient improved rapidly under treatment by potassium iodide and mercury and left the hospital well but with the signs of aortic regurgitation. There can scarcely be much doubt that this was a case of rupture of an aortic cusp already the site of a syphilitic valvulitis.

### *Diagnosis.*

All this indirect evidence, taken together, makes it certain that syphilitic aortitis, with aortic valvulitis, is a not uncommon disease. It is obviously very important that we should bear this fact in mind in our practice and be prepared to suspect the disease, even though, as I shall now proceed to show, our means of diagnosing it with certainty are slender. If we wait until gross structural changes are produced in the aortic cusps we wait too long. It is to be doubted whether, in syphilis, as in acute rheumatism, complete resolution can ever take place once valvulitis has been present. But by checking, or by stopping altogether, the process of active infiltration and proliferation in the valve cusps we can lessen the residual damage in these structures, and thus prolong considerably the period of relative cardiac sufficiency which every case of aortic incompetence can only at best enjoy. No doubt a part of this increased freedom from undesirable sequelæ is due here, as it is in rheumatism in similar circumstances, to the fact that the myocardium has been protected from gross damage.

An important question arises: At about what interval after the primary infection does syphilitic disease of the aorta begin? At about what age shall we begin to consider the possible presence of the disease? In treating quite recently of a series of cases of cardiac syphilis, Carey Coombs computes that the period between infection and the onset of the symptoms was over 20 years; he gives the average age of his patients as 53. Coombs does not distinguish between the cases showing evidence of aortic disease and those whose main defect happened to be myocardial, and it may perhaps be assumed that such distinction would have affected these figures. As the result of a still larger number of cases studied by him, Strickland Goodall has recently put the period elapsing between the primary infection and the appearance of symptoms even higher than this. Although I am unable to give statistics, I am led to the view from my own experience that these figures give no true expression of the early cases of the disease. It is notoriously difficult to differentiate between the fibrotic residues of old inflammation and the lesions of still active disease; no more common problem arises in the post-mortem room than the proper interpretation of the changes frequently seen in the aorta. And no less difficulty arises in regard to the interpretation of symptoms during life: are they due to active disease or to atheromatous changes in the production of which syphilis is only one causative factor? If we follow the view that smouldering infection still remains in all cases in which there is to be obtained a positive complement-fixation test this makes it more, and not less, likely that the first invasion of the tissues by the *Treponema pallidum* takes place much earlier than signs or even symptoms show themselves.

Is it not probable that the known facts in regard to that other distinctive and equally common syphilitic arterial disease, cerebral arteritis, give us some guide in this connexion? Unless we have some reasons for taking a different view, it is at least likely that the time of incidence in the course of syphilis of arteritis in the branches of the circle of Willis approximates to the time of incidence of syphilis of the aorta and the aortic cusps. And the former we have fairly good evidence for placing at from five to ten years after the primary infection. The difference in the age-incidence, when calculated from a large series of cases, would be explained by the fact that syphilis of the cerebral arteries can scarcely remain long without symptoms, whereas syphilis of the aorta can and frequently does. Perhaps this matter may be stated most clearly by postulating two somewhat different types of lesion produced by syphilis in the aorta, as there are two somewhat different types of lesion in the central nervous system. There is an earlier lesion of the gummatous kind, largely proliferative in character, and possessed of focal lesions in a high degree, and a later type of lesion, largely fibrotic in its features, to which the term "parasyphilitic" may not be inappropriately applied. If this conception be admissible then the apparent discrepancy to which I have referred would be explained. So also would be explained, and rendered again analogous, the known lack of effective response to antisyphilitic treatment in cases of syphilitic aortitis when once the signs of aortic incompetence are present. No doubt both types of lesion may be present at the same time, a fact which accounts in part for the great difficulty often experienced in the interpretation of post-mortem findings. If this view be substantially correct, it becomes a still more urgent matter to track down the early cases by all means in our power. We must look for these cases in men (by preference) who are between the ages of 25 and 40.

### *Symptoms and Physical Signs.*

The main, and in perhaps most of the cases the only, symptom is pain, anginoid in character, situated in the region of the sternum, rather than in the region of the precordium, with a zone of reference or spread less extensive than is usual in angina pectoris. The pain is usually induced by, or increased with, effort, but this feature is not constant. Shortness of breath and the effort syndrome are sometimes present, but when this is so it is probable, from our general knowledge of these symptoms, that there is myocardial disease in addition to, or rather than, aortitis. There may be complaint of more general symptoms, such as slackness and vague dyspeptic symptoms, and the patient may be anæmic. But since these latter symptoms are common to so many diseases, it remains that it is the pain, and the pain alone, which arouses our suspicions in most of the cases.

As regards physical signs, these are absent or are equivocal. Lack of clearness in the aortic second sound, whether directly over the valve or at any point where the aortic second sound is listened to critically—and this should include the region just above the xiphisternum—is very suspicious. A ringing character to this sound, in the absence of high arterial tension, is perhaps equally significant. More change than one of these—to wit, a definite diastolic bruit—probably means that the valvulitis is not early and that resolution will not occur completely with treatment. I have only once, in a case of syphilitic aortitis, heard a definite diastolic bruit which disappeared with antisyphilitic treatment. It returned some two years later, despite continued treatment, and the patient then developed the arterial signs of aortic regurgitation. It is to be inferred that the disease was not detected at a sufficiently early stage to avert cicatricial changes. It is perhaps doubtful if we could ever completely avert some degree of cicatricial changes if a syphilitic valvulitis were once established, any more than we can in a rheumatic valvulitis, even though our means of treatment are much more "specific." The disappearance of the bruit and its reappearance later in permanent fashion is very reminiscent of what we know to happen not infrequently in the case of rheumatic fever.

I have never satisfied myself that the disease in its curable stage yields demonstrable dilatation of the aorta by physical signs. Nor have I ever got this evidence from X ray examination, though I understand that Price has met with a different experience. Our French colleagues construct a more elaborate picture of the signs and symptoms of early degrees of aortitis, but I find it difficult to follow them in actual practice. I doubt if at present we can go further than to say that a man below the age of 50, whose arterial tension is not raised, whose blood gives a positive complement fixation for syphilis, and who complains of pain that may reasonably be attributed to the aorta is probably suffering from syphilitic disease of this structure. If his age be under 40, the diagnosis is less uncertain. Treatment should be carried out promptly and thoroughly, and, since it is held strongly by some high authorities that active syphilitic infection should be presumed so long as the complement-fixation test remains positive, here, at least, this doctrine should determine our action, since there is so much to gain if it be true, and so little to lose if it be false. The important points are these: first, that it may be possible to detect and to treat syphilitic aortitis before as yet the aortic cusps are involved; and, secondly, that if it be detected and treated whilst as yet the degree of valvulitis is slight, the resultant valve damage may be so little and so unprogressive as not to prejudice the patient for an indefinite number of years.

### INFLUENCE OF CONGENITAL DEFECTS.

I pass now to consider certain ætiological factors in the production of endocarditis, both of the valve cusps and of the chambers of the heart, which, though the exclusion of a chronic infective element must only be presumed at any time with great caution, appear to be outside the sphere of microbic activity. Having spoken of the possibility of congenital defects in connexion with some cases of pure mitral stenosis I will take these first. It has been for a long time held that congenital defects in the heart are almost confined to the right side of this organ. Such defects as are found in the left side, if we except these gross defects which lead to such massive disturbances of the circulation that there are early and lethal results, have been too lightly passed over. There is good reason to believe that we have been too cavalier in our observations concerning the intimate anatomy of the heart valves, and of the aortic valve in particular, in relation to endocardial disease. Deviations from the normal in these delicate structures may well prove to be a determining factor in infection of a grade hitherto unsuspected. This possibility did not escape the eyes of older observers. Thayer reminds us that the recognition of the fact that bicuspid aortic and pulmonary valves predisposes to disease is as old as Paget. Osler also pointed out the liability of these malformed segments to sclerotic endocarditis. Of 17 cases examined by him, all presented sclerotic changes and the majority of them had, during life, the clinical features of incompetence.

Glynn, who gave the Lumleian lectures upon Infective Endocarditis in the year 1903, refers in detail to a specimen obtained from a man aged 48 years, in which one of the two cusps was found to be torn and everted and whose fatal illness started after a strain, during which it is presumed that the diseased cusp was damaged. I pointed out in 1909 that congenital defects that were compatible with good health and were outside the category of those grosser lesions which were to be recognised during life might still be of great importance in inducing active endocarditis. I cited cases of this as illustrated by defective interventricular septum and patent ductus arteriosus in patients of 31 and 42 years of age respectively. I drew special attention to the association of bicuspid aortic valves with bacterial endocarditis in 1905 when publishing the first case of endocarditis due to Pfeiffer's bacillus. In 1909 I dealt with this point more fully, having found bicuspid aortic valves in two other hearts in the museum of St. Bartholomew's Hospital, each the site of bacterial endocarditis. In still a fourth specimen, from a case of pneumococcal endocarditis, the pulmonary valve cusps were only two in number. Since that date four other hearts have been added to the museum, all showing bicuspid aortic valves, and all affected by bacterial endocarditis. In addition, Dr. T. H. G. Shore, the curator, possesses three unmounted specimens of a similar kind which he obtained from soldiers dying of this disease in France. It is very clear that the condition here dealt with is one of considerable importance.

In 1923 Lewis and Grant contributed a valuable paper to *Heart*, in which they treated of the normal structure of the aortic valve and especially of the relations of the aortic media to the annulus fibrosus. They describe in detail four cases of the condition of bicuspid aortic valve and seven further cases associated with bacterial endocarditis. There follows an analysis of 106 cases collected from the literature. Of these, 63 were males, 20 females, and in 23 cases the sex was not stated. These authors estimate that no fewer than 23 per cent. of males reaching adult life, and possessing congenitally bicuspid aortic valves, die of active endocarditis. The moral of all this is, as Libman remarks, that it behoves us to be much more critical than we have hitherto been in our examination of diseased hearts in the dead-house. Interpretations of our findings must needs be very cautious since the matter is by no means easy. We must endeavour to distinguish (*a*) true congenital defects, (*b*) the sclerotic residuas of effete infections by rheumatism, (*c*) the results of healed bacterial infection, and (*d*) sclerosis from purely mechanical causes. With so many possibilities before us, it is obvious that the task is full of difficulti[illegible] I shall return to this matter in dealing wit[illegible] [illegible]s relating to pathogenesis.

# Goulstonian Lectures

ON THE

# DEVELOPMENT OF PSYCHOPATHOLOGY

## AND ITS PLACE IN MEDICINE.

*Delivered at the Royal College of Physicians of London on March 11th, 16th, and 18th, 1926,*

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## LECTURE II.*

IN the preceding lecture the development of psychopathology up to the formulation of the conception of suggestion was described, and an attempt was made to examine and evaluate this conception. We may now pass on to consider the history of a school of thought whose tenets are closely allied to those of the suggestionists. This is the so-called "persuasionist school," and its chief protagonists in the literature are Dubois, of Berne, and Dejerine, of Paris. Both are mainly concerned with therapy rather than with ætiology, and ætiology is with both authors regrettably vague and unsystematised, but they differ from one another in certain important respects. For Dubois[1] persuasion is a therapeutic process in which certain effects are produced by chains of logical reasoning, and he distinguishes it sharply from suggestion. He does not deny the potency of the latter, but believes it to be capable only of evil, and he ascribes to it most of the symptoms occurring in the neuropathic conditions which he treats. Persuasion, on the other hand, does not trade upon the blind credulity of the patient, but enables him to understand the erroneous lines along which his thoughts have proceeded and the way in which suggestions have produced an appearance of illness which is not really there, and it thereby gives him the necessary means to correct these morbid effects. Dubois's conception is almost entirely intellectualistic, and ascribes to reason a power as a driving force which it very certainly does not possess. It is an unquestionable fact that his method achieves results, but we are compelled to believe that this is because driving forces other than reason are interpolated, of which the suggestive potency of the physician's personality is probably the most frequent and important. In so far, however, as this suggestive action calls to its aid the patient's understanding, instead of merely dumping into his mind a belief without connexions or logical supports, persuasion may be said to be more integrative than simple suggestion, and to this extent superior to it.

Dejerine[2] is less intellectualistic than Dubois, and appreciates the weakness of reason as a driving force. His conception of persuasion includes not only the logical processes of Dubois, but also the principle that an "emotion" must be introduced in order to make these logical processes effective. He repudiates suggestion as a producer of evil almost as energetically as Dubois, but it is difficult to see how his conception of an emotional persuasion differs in its essentials from that of suggestion. His book is full of practically useful details of treatment, but his ætiological theories are not very precise. He ascribes a number of conditions to what he terms "preoccupation," citing, for example, the frequent functional disturbances of digestive and other organs which may arise from the patient becoming "preoccupied" with—i.e., having his attention fixed upon—the organ in question, and the consequent development

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[*] Lecture I. appeared in THE LANCET of March 20th.

[1] Dubois: The Psychic Treatment of Nervous Disorders, English translation, 1909.

[2] Dejerine and Gauckler: The Psychoneuroses and their Treatment by Psychotherapy, English translation, 1913.

of fears and apprehensions, which ultimately produce the neurosis There can be no question that this conception of Dejerine's does apply to many cases, and that its application points the way to some valuable psychotherapeutic procedures If we examine the conception itself, however, it does not seem to be materially different from that of suggestion, and adds but little to the limited understanding of our cases which suggestion is already able to offer We may, indeed, sum up the whole contribution to psychopathology of the persuasionist schools as an elaboration of the suggestionist theories except in so far as these schools have to some extent become permeated by more basic conceptions taken over from other investigators whose methods of attack have been altogether distinct It is the work of these other investigators which has been chiefly responsible for the building of modern psychopathology, and to understand that building we must go back to the last decade of the nineteenth century and trace out the lines of development which diverged from the simple study of suggestion after the time of Charcot in particular the dissociation conception of Janet and the dynamic conception of Freud

The immensely important contribution of Janet may be said to have arisen from the blending of two fields of inquiry—the study of hypnotism on the one hand, and that of hysteria on the other hand, both of which had come within the purview of Janet's teacher, Charcot We have already dealt with the development of hypnotism, but something must now be said of the history of hysteria, and the views of that disorder which held the field at the time when Janet commenced his investigations

### THE HISTORY OF HYSTERIA.

In ancient medicine the phenomena of hysteria were explained by that demonological conception under which all pictures of disease were subsumed but this magico religious view seems to have clung longer to hysteria than to other disorders Its influence was rampant in the Middle Ages, when many hysterical symptoms were regarded as the characteristics of witchcraft, and others were believed to be the result of possession by benign or malignant spirits The first divergence from the demonological conception, however, is to be found in what may be called the metaphysiological speculations of the Greeks For Hippocrates hysteria was due to the wanderings of the uterus about the body in search of humidity, and the pressures thereby exerted upon other organs explained the various symptoms observed Coma and lethargy, for example, arose from pressure on the vessels mounting to the head, suffocation from pressure on the bronchial tubes, palpitations from pressure on the heart, and epigastric oppression from pressure on the liver Galen rejected the Hippocratic theory on the very solid ground that the anatomical fixations of the uterus did not permit of it wandering about the body but he substituted for it the scarcely better founded view that hysteria was the result of engorgement of the uterus by its own fluid or by menstrual blood Except for the demonological interlude of the Middle Ages, this uterine pathology persisted in various guises down to the seventeenth century, when Lepois,[3] in France, and Thomas Willis,[4] in this country, first put forward the conception that the seat of hysteria was in the brain The views of Willis are of interest to us here because he observed the causal relationship existing between emotional disturbances and hysteria, but he held that the former acted upon the brain by way of the "animal spirits," which, with the other writers of his time, he regarded as the moving force of nervous action, and therefore his view is essentially physiological and not psychological Sydenham[5] held that hysteria was a general malady of the nervous system, but here again he supposed this to consist in a disorder of the part producing "animal spirits"

The history of hysteria before Charcot may be said to have culminated in the work of Briquet, who in his "Traité de l'Hystérie," published in 1859, reviewed all the theories which had hitherto been put forward, and tested them in the light of his own observations Briquet's methods were admirably conceived, and they constitute perhaps the first clear attempt to apply to this sphere the rigid procedure of science He constantly emphasises the importance of unbiased observations of facts and the avoidance of a priori theories, and strives to base his own views entirely on the careful examination of his 430 cases He finally concludes that "hysteria is a malady consisting in a neurosis of the portion of the brain destined to receive the affective impressions and the sensations"[6] It will be noted that, although this definition contains some psychological terms, it is essentially conceived in a physiological spirit, and is pathological rather than psychopathological This view may be said, indeed, to have persisted as the doctrine of "functional nervous disorder" which held the field until comparatively recent times

Charcot noted that in certain cases of traumatic hysteria the physical accident was not in itself the cause of the illness, but that a part was played by the memories left by the accident, and finally he proposed the view that certain of the symptoms of hysteria were due to "ideas" With this view was laid the foundation-stone of the psychopathological conception of hysteria, and here also we see the beginning of a delimitation of "psychogenic" from other diseases. Charcot himself, however, did not follow out his observation to its logical consequences, but strove constantly to bring hysteria into line with organic nervous disorder He related its phenomena to those of hypnosis, and observed the effect of suggestion in both, but he regarded hysteria as a definite disease characterised by definite stigmata. He arrived, indeed, at a conception which was the converse of the later one of Babinski in that he held hypnosis to be a manifestation of hysteria, and therefore to be part of a disease in which suggestibility appeared, but did not constitute its essence

Nevertheless, the seed which Charcot had sown fell upon fertile ground, and was developed into a rich harvest by the researches of Janet.[7] He found that the phenomena of hysteria were capable of being interpreted in psychological terms, and he finally succeeded in formulating psychopathological conceptions which served, at any rate in some measure, to explain those phenomena The nature and importance of these conceptions will be best understood if a brief description is given of Janet's observations and conclusions with regard to a single group of hysterical symptoms, and for this purpose the familiar anaesthesias may be selected

In the first place, Janet noted that hysterical anaesthesia frequently had a peculiar distribution The well known glove anaesthesia, for example, ending in a sharp line at the level of the wrist, had a distribution which did not correspond to any possible lesion of the nervous system, but which did correspond precisely to something—namely, the patient's idea of his own hand Clearly, therefore, the incidence of this symptom was determined by a factor of a psychological order, and if this were so, it would be profitable to seek for a psychological conception in order to explain it Again, these anaesthesias exhibited features of a curiously paradoxical character It was observed that patients suffering from extensive hysterical anaesthesias involving large areas of the body rarely sustained any accidental injury, whereas patients with far smaller anaesthesias of organic origin, such as occur, for example, in syringomyelia, frequently sustained such injury. The only conclusion possible would seem to be that the patients must feel with their anæsthetic limbs, as otherwise injury would inevitably befall them. Similarly, it was found that patients with an extreme hysterical amblyopia, which reduced the field of vision almost to a single point, were able to play at ball, a performance obviously out of the question unless the major part of the retina were functioning normally. This paradoxical character appeared most clearly, perhaps, in the case of a boy who developed hysterical symptoms after being concerned in a fire. The symptoms were of two kinds: firstly, the presence of an amblyopia, which cut down the field of vision in both eyes to 30°; secondly, the occurrence of fits, which were originated whenever the patient saw a burning object. Now if the boy were tested with a perimeter in the usual way he was unable to see the paper disc until it had reached the 30° radius. Nevertheless, if a lighted match were substituted for the paper disc, a fit invariably occurred as soon as the match reached the limit of normal vision. Obviously, therefore, the patient could see over the whole field of vision, and equally obviously he was blind to everything outside 30°.

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[3] Lepois Morbus qui vulgo dicitur hysteria, 1620

[4] Willis Opera medica: Pathologia cerebri et nervosi generis, 1660

[5] Sydenham Dissertatio epistolaris ad B. Coole.

[6] Briquet Traité clinique et thérapeutique de l'hystérie, 1859 p 601 "l'hystérie est une maladie consistant dans une névrose de la portion d'encéphale destinée à recevoir les impressions affectives et les sensations."

[7] Janet's chief works are: L'Automatisme psychologique 1889, État mental des hystériques 1892 English translation The Mental State of Hystericals, 1901 Névroses et idées fixes 1897 Les obsessions et la psychasthénie 1903 Les médications psychologiques translation Psychological Healing, 1925.

### DISSOCIATION OF CONSCIOUSNESS.

In order to explain these features Janet devised the conception of "dissociation of consciousness." He assumed that consciousness, instead of pursuing its course as a unitary stream, could be split into two or more independent currents, so that the consciousness of one current would be unaware of, and uncontrollable by, the consciousness of other contemporaneous currents. Some approximation to this situation occurs normally when we carry out at the same time two independent activities, such as playing the piano and thinking out some problem, but in hysteria the dissociation may reach an extreme degree. Here the sensations arising from an entire limb may be diverted into a current separated from the main stream of consciousness, thereby producing an anæsthesia. Although thus cut off, and incapable of being perceived by the main stream, they can influence the motor apparatus, and thereby determine the phenomena observed—the avoidance of injury by the anæsthetic patient, and the fits in the blind boy. In this way the apparent paradox, that the sensations exist and yet do not exist, can be resolved. The conception of dissociation, therefore, explains the observed facts, but if it is to satisfy the canons of scientific method it must also be capable of verification by an appeal to experience. Actually it does satisfy this further test because, if a method be devised whereby access to the dissociated portion can be obtained, the continued existence of the apparently absent sensations can be experimentally demonstrated. By using the manœuvre known as automatic writing, for example, the anæsthetic arm can be made to record, unknown to the patient, the fact that it is being pricked.

Functional paralyses are similarly explicable, as is also hysterical amnesia. The latter consists in a loss of memory for a certain defined period of the patient's life, extending over days, months, or years, and was a common phenomenon in the psychoneuroses of the war. Here, again, the conception of dissociation presumes that the missing memories are not destroyed but diverted into a current split off from the main stream of consciousness, and once more the validity of this conception can be experimentally demonstrated by hypnotising the patient, and thus recovering the lost memories.

Other hysterical phenomena, such as somnambulism and double personalities, can be explained by a dissociation essentially identical with that responsible for amnesias, but differing in its mode of incidence. In these cases a dissociated current suddenly usurps the field of consciousness, causing a complete break in [illegible] uity of the patient's experience and [illegible] After occupying the stage for a certain period of time the dissociated current is once more submerged, and the patient resumes the thread of his former life, generally without any awareness that it has been interrupted. Hysterical somnambulisms can be closely paralleled by certain conditions artificially produced under hypnosis, and a number of the processes occurring in hypnosis, particularly in its more profound phases, are to be interpreted in terms of dissociation.

The conception of dissociation cast a flood of light on a mass of phenomena which had hitherto baffled all attempts at explanation. It was legitimately constructed according to the canons of science by the careful collection of observed facts and the devising of a formula which would resume those facts. It could, moreover, be tested to any desired extent by constantly comparing the results capable of being deduced from the formula with those actually found by experience and experiment. Finally, it pointed out a road along which therapeutic attempts might hopefully be prosecuted. Certain difficulties have been noted in the application of the concept to some of the phenomena with which it is concerned, but these are due rather to misapprehension of the nature of the concept than to defects in the concept itself. For example, in many cases of hypnotic somnambulism the hypnotic consciousness is aware of the whole range of the patient's experience, whereas what we may call the normal consciousness has no knowledge of the experience belonging to the hypnotic consciousness. At first sight this one-sided and non-reciprocal lack of awareness may seem difficult to explain by dissociation, which would appear necessarily to involve a break between the two streams of consciousness equally untraversable in whichever direction it might be attempted, whereas in the example cited the break is impassable when viewed from the side of the normal consciousness, but traversable with ease when viewed from the side of the hypnotic consciousness. The difficulty is dependent, however, upon a misconception of the nature of dissociation, and an abuse of the spatial metaphor in which it is defined. Dissociation does not, of course, imply an actual separation in space, and from the nature of the phenomena with which it is concerned it obviously can have no real spatial significance whatever. Spatial terms are used because they afford a useful method of describing relationship, but actually the dissociation is a functional dissociation, an "out of gear" relationship, and if this is understood the existence of a non-reciprocal dissociation ceases to be inexplicable.

### THE SUBCONSCIOUS.

Janet's conception of dissociation involves necessarily another conception concerning which something must be said, that of the "subconscious." This term has been used in a variety of senses by different authors, but in Janet's work it indicates the existence, contemporaneously with the main stream of consciousness, of mental processes which are independent of and unconnected with the main stream. In this sense it will be apparent that subconsciousness is merely a corollary of dissociation, for a mental process which exists independently of the main stream of consciousness is a dissociated mental process.

The conception of the subconscious has been attacked on the ground that processes which are not part of the personal consciousness are not conscious at all, that they are merely neurological or physiological, and have no psychological aspect. This criticism arises from a complete misunderstanding of the nature and justification of a psychological conception. In the first place, the evidence for the existence of Janet's subconscious processes is precisely the same as the evidence for the existence of any conscious processes whatever. Both are dependent upon inferences from observed facts. If I see my neighbour writing certain words I infer the existence in him of certain conscious processes, but I have no direct experience of the latter; the only objective facts are the words and the actions I see. Similarly, if a patient's arm writes a coherent and relevant statement, although the patient himself has no knowledge of the fact that his arm is so engaged, or of the subject upon which it writes, I have as much right to attribute consciousness to the mechanism responsible for the statement written by the arm as I have to attribute consciousness to any other aspect of the patient's behaviour.[8] Secondly, the observed facts are not in themselves either physiological or psychological; they are behaviour facts, and the physiological or psychological aspect is only introduced when an attempt is made to devise conceptions to explain them. If explanation is attempted in terms of nerve cells and fibres a physiological conception is employed, if in terms of ideas and memories a psychological conception is employed. It is not that either conception is wrong; both are permissible, and the choice between them on scientific grounds depends entirely upon their relative utility in enabling us to resume and control the facts of experience. To object, therefore, that the facts which Janet interprets by his conception of the subconscious are physiological, and not psychological, is irrelevant and indeed meaningless. The only question at issue is whether in the present state of our knowledge a psychological conception, such as Janet's, permits us to understand, to predict, and to control the facts of hysteria and hypnotism better than a physiological conception. To this question there can only be one answer, although we are quite entitled to hope that ultimately a physiological explanation still more adequate and useful will be devised.

Morton Prince has explored the field opened up by Janet in several interesting directions, and has applied the concept of dissociation to the study of a wide range of phenomena. He has, indeed, used the experimental method in psychopathology more consistently than any other investigator, and his work is a valuable object-lesson of what can be accomplished by this method. In particular his fascinating "Dissociation of a Personality"[9] provides a convincing demonstration of the light which the conception of dissociation is able to throw on the problem of double personality, although, as we shall see later, it also affords an excellent example of the limitations of that conception.

Janet has himself extended the conception of dissociation to a wider field than that of hysteria and hypnosis He brought into a single disease-entity, under the name of "psychasthenia," practically all the manifestations of the psychoneuroses other than the definitely hysterical. In its symptomatology were included phobias, obsessions, compulsive actions of all kinds, morbid anxiety, and states of doubt and hesitation. This remarkable generalisation gathered together a multitude of syndromes which had hitherto been described as independent disorders under such names as "folie de doute," agoraphobia, and so forth, and conceived them all to be merely different aspects of one and the same essential disturbance The essential disturbance consisted in a dissociation analogous to that responsible for hysteria, although differing from the latter in certain important respects. Starting from the assumption that normal adaptation to reality requires the integration of a number of relevant mental processes, Janet held that both hysteria and psychasthenia are due to a failure of this necessary integration owing to the presence of dissociation. In the case of hysteria the dissociation is molar—that is to say, masses of processes are entirely split off from the main stream—thus producing the anæsthesias, paralyses, and somnambulisms. In the case of psychasthenia, on the other hand, the dissociation is molecular, the various processes not being completely segregated from one another but merely loosened in their interconnections, so that the firm integration required for efficient adaptation to reality cannot be obtained. In Janet's "Les Obsessions et la Psychasthénie" this principle is worked out in an extraordinarily ingenious manner, and it cannot be denied that it has some value as an explanatory concept. Nevertheless, although it gives us a measure of help and understanding in this complex and difficult field, there is little doubt that the conception of molecular dissociation is unduly wide, and describes a process so elementary and universal that it brings together diverse clinical pictures between which only a superficial resemblance can be traced. We see here, as we have already seen in the case of suggestion, that besetting tendency to generalise a valuable conception until its explanatory value becomes seriously impaired.

### THE PLACE OF DISSOCIATION IN PSYCHOPATHOLOGY.

We may now pause to consider the place in psychopathology of the conception of dissociation. Even in the wide sense which has just been discussed it has a certain value in that it emphasises the important principle that the processes composing mental activity are not uniformly bound together into a single stream, but may possess varying degrees of independence, a principle which gives us some understanding not only of psychasthenia, but also of the hallucinations, delusions, and other phenomena met with in the psychoses. It has been said, however, that this principle is so general in its application that it does not give much help in the interpretation of individual pictures of disease, and dissociation will therefore be a more valuable concept if it is limited to the original sense in which Janet brought it forward to explain the symptoms of hysteria.

There is no necessity to recapitulate the merits of this conception and the light that it has shed on the understanding and control of certain phenomena. Something must be said, however, concerning its limitations and defects. To begin with, it does not seem to be applicable to all the phenomena which occur in hysteria. It explains the anæsthesias, for example, but hardly the hyperæsthesias. On the other hand, it explains conditions which occur outside the range of hysteria, such as the automatisms of epilepsy. Janet may be said, indeed, to have discovered a concept of considerable value throughout the whole range of psychopathology rather than one which will explain all the phenomena of any one part thereof. Secondly, its explanatory value is limited. It enables us to understand that the characters of hysterical anæsthesia or paralysis are due to a splitting of consciousness, but we are immediately faced with the further problem as to *why* this splitting takes place. Dissociation may, in fact, be regarded as an "anatomical" as opposed to a "functional" conception. This is well seen in Prince's "Dissociation of a Personality." In it we have an illuminating analysis whereby the speech and behaviour of a patient is shown to be a manifestation of the activities of a number of distinct personalities, but the question as to the conditions responsible for this splitting—in other words, why the dissociation has occurred—is left without satisfactory answer. Dissociation therefore takes us a certain distance in the understanding of our patients, but leaves us with the further problem of explaining the dissociation itself.

Janet has himself appreciated this limitation, and sought to overcome it by his doctrine of "psychological tension." This is a property which varies in a manner analogous to the pressure of the atmosphere, the variations being produced by constitutional, emotional, and other causes. When it is high, mental processes are integrated with comparative ease and efficient adaptation to reality is attained. When it is low, the required integration is impossible and dissociation of some kind occurs, either the molar dissociation of hysteria or the molecular dissociation of psychasthenia. This is not a very satisfying explanation, however, and seems to come perilously near explaining the incidence of dissociation by a hypothetical capacity of dissociability. It is true that Janet has gone further in that he has emphasised the part played by emotions and the automatic development of affectively toned "idées fixes," and may be said, therefore, to be the forerunner of the dynamic interpretation of the psychoneuroses, but this dynamic aspect is not clearly followed up.

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[8] It must, of course, be noted that Janet's conception of the subconscious is to be sharply distinguished from the conception of the "unconscious," and that the foregoing argument is not applicable to the latter The "unconscious" will be discussed subsequently. A more detailed treatment of both these conceptions, and of their relationship, will be found in the author's The Conception of the Subconscious, Jour. of Abnorm. Psychol., 1900, reprinted in Morton Prince's Subconscious Phenomena, 1915

[9] Morton Prince: The Dissociation of a Personality, 1906.

The stage in the history of psychopathology marked by the conception of dissociation is comparable to that existing in the history of astronomy at the time of Kepler. Kepler had shown that the planets move in ellipses round the sun, but he could not explain why they did so. This latter achievement was the work of Newton with his formulation of the law of gravity. Newton's step was based on the conception that the phenomena observed were the result of certain hypothetical forces, interacting in accordance with certain precisely definable laws. It thus added a dynamic conception as a means of understanding the observed sequence of phenomena. The corresponding step in the construction of a psychological conception capable of taking us beyond the level reached by dissociation clearly required a similar advance to a dynamic point of view, and it is the attempt to make this advance which actually characterises the later history of psychopathology.

### Dynamic Conceptions in Psychopathology.

The dynamic conception in psychopathology has derived its chief impetus from the work of Freud, but it must not be forgotten that a parallel dynamic aspect made its appearance in academic psychology with the development of the conception of instinct. The view that instinct, or rather various instincts, can be regarded as driving forces whose action and interaction produce the mental phenomena and behaviour of man has received its best-known expression in the work of McDougall. He defines instinct as "an inherited or innate psycho-physical disposition which determines its possessor to perceive, and to pay attention to, objects of a certain class, to experience an emotional excitement of a particular quality upon perceiving such an object, and to act in regard to it in a particular manner, or, at least, to experience an impulse to such action."[10] For example, the instinct of flight determines us to perceive dangerous objects or situations, to experience the emotion of fear, and to act in a manner which will remove us from the source of danger. This definition is open to criticism, and especially is it doubtful whether the position assigned therein to emotion is correct. It would seem that emotion is manifested when the action of an instinct is inhibited—e.g., fear, when it is not possible to remove ourselves from the source of danger—rather than in the normal course of an unobstructed instinct. We are not concerned here with details of this character, however, but only with the general conception of instinct as a driving force capable of explaining the activity of man. It is clear that psychology has thus obtained a dynamic conception enabling it to emerge from the arid paths of academic introspection and mere description to which it was so long condemned. By the aid of this dynamic standpoint a vista is opened up whereby psychology is no longer limited to recording the "how" of the phenomena with which it deals, but can attempt an answer to the question "Why?" It can attempt to conceive the sequence of thought and behaviour in man as a result of the interplay of various instinctive forces acting according to precisely definable laws, and if this attempt is successful psychology will have been lifted from the level of a descriptive science to that long ago attained by such sciences as chemistry and physics.

The question immediately arises, however, whether a psychological conception of this character is permissible in science. The naïve notion that it deals with flimsy abstractions unworthy of being ranked with such solid realities as electrons and ether waves has already been discussed, but there is a more substantial difficulty to be considered. The conception has a teleological aspect, and introduces an element which is not only psychological but which has no correlate or parallel in physics—namely, the element of "purpose." According to McDougall, an instinctive process is not completely explained by a *vis a tergo*. It not only moves towards an end, but the existence of that end is a determining factor throughout, and may continually modify the process during its whole course. In other words, the process not merely happens to serve a purpose, but is actually in part determined by that purpose. Now it is sometimes held that the introduction of purpose as a determining factor is incompatible with the notion of causality, and that, as causality is the foundation-stone of scientific method, no conception involving purpose can have a place in science.[11] A long war has been waged against this mechanistic limitation of science and, although it is obviously impossible here to deal with the subject adequately, something must be said, because to admit this limitation would necessitate the expulsion of modern psychopathology from the domain of science.

Psychological conceptions are characterised by the fact that they are couched in terms of experience, and, as purpose is clearly an integral part of our experience, there is no objection on this score to the incorporation of purpose in a psychological conception. The further question whether purpose is consonant or incompatible with causality requires for its answer a precise definition of this latter word, and it is apparent that it is used in two senses which are by no means identical.[12] In one sense it indicates an unconditional sequence, the fact that (*a*) is inevitably followed by (*b*). In this sense there seems to be no reason why purpose should be excluded from causality; it takes its place as one of the factors determining a particular sequence of phenomena. If we can ascertain the existence of this and the other conditioning factors, and are acquainted with their laws of action, we can predict the course of future phenomena and thus satisfy the essential criterion of the method of science. There is a second sense, however, in which the word causality is used. Here it indicates not merely inevitable succession, but a relation of identity between cause and effect. The effect is regarded as the cause in a new form. For example, when we say that heat is the cause of motion we mean that motion is the equivalent of heat in a new form. Heat is conceived as being the vibration of particles, and hence motion can be regarded as a continuation of the same phenomena. In this sense causality is an equation, and one which is essentially reversible, so that the sequence of cause and effect can be equally well replaced by the sequence of effect and cause. This is the sense in which causality is understood in the mechanistic sciences, and it would seem that it cannot be applied to purposive psychology, for a sequence in which purpose is playing a part clearly is not reversible and cannot be regarded as an equation. The introduction of purpose, therefore, removes psychology from the mechanistic sciences, but this does not justify its removal from the whole field of science. The method of science requires the assumption of causality in the first sense, but not necessarily in the second sense, and in the first sense causality is as integral a part of purposive psychology as it is of any other branch of science. If it were insisted that causality in the second sense is an essential constituent of science, then not only psychology, but physiology and biology also, would have to be excluded, because in the conceptions of all branches of knowledge dealing with life processes irreversibility of the sequences has necessarily to be admitted. The inapplicability of the narrower con-

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all : An Introduction to Social Psychology, sixteenth , p. 20.

[11] This is the standpoint taken by Jung, cf. Jung, Analytical Psychology, second edition, 1917, pp. x. and xv. A vindication of "purpose" as an integral factor in psychology will be found in McDougall, An Outline of Psychology, 1923.

[12] Höffding: The Problems of Philosophy, 1905, p. 66.

cept of causality is not, therefore, a peculiarity of psychology, but a peculiarity of all the biological sciences, and the circumstances we have considered merely indicate that psychology is extra-mechanistic, but not extra-scientific.

### THE THEORIES OF FREUD.

This digression has been necessary in order to justify the incorporation into science of conceptions involving the element of purpose, and we may now return to the later history of psychopathology in which conceptions of this character play a prominent part. This later history is inseparably bound up with the work of Freud, to whom the most noteworthy advances in psychopathology are unquestionably due, whatever view we may ultimately reach concerning the validity of many of his doctrines.

Freud's conceptions have undergone an extensive development during the course of his career, and it is impossible here either to trace out this development in detail or to give any adequate account of his theories as they stand to-day. An acquaintance with their general characters must be assumed, and we shall select for consideration only certain broad features which are relevant to our present problem.[13]

In 1880 Josef Breuer, of Vienna, investigated a case of hysteria in which he observed the traumatic effect of certain memories of which the patient was unconscious, and the therapeutic result obtained by bringing these memories once more into consciousness. This investigation, although it was not published until many years later, was the starting point of Freud's work. In 1893 he brought out, in association with Breuer, a preliminary paper, and in 1895 the "Studien über Hysterie," which may be said to express the first stage of Freud's development. The keynote of this stage, the view that "the hysteric suffers mainly from reminiscences," is not essentially different from Janet's notion of "idées fixes," which certainly preceded in time Breuer and Freud's publication, although it is claimed that the latter had a quite independent origin. There is apparent in the work of Breuer and Freud, however, a much more definite dynamic formulation than Janet had attained, and new conceptions of fundamental importance, such as "repression" and "resistance," were laid down. To this period belongs the use of hypnosis as a method of recovering buried memories, the conception of "psychic trauma," and treatment by "catharsis"—that is to say, the bringing to consciousness of the traumatic memory and its "abreaction" by allowing it to obtain the normal emotional expression which had formerly been denied to it We need not concern ourselves here with these conceptions except to note that hypnosis was abandoned by Freud many years ago, as was also the notion of "psychic trauma," and that treatment by catharsis only bears a remote resemblance to the modern method of psycho analysis.

After the dissolution of the partnership between Breuer and Freud the latter proceeded independently and produced a succession of works in which the earlier conceptions were considerably modified, extended, and made more systematic and precise. Although the development has been continuous, it will be convenient to postpone for the moment the consideration of the later additions, and to devote our attention to the theories as they stood before the war. The essential structure, with which we are alone concerned, remains the same to-day, but it is easier to see and to examine without the accretions and amplifications of the last decade.

The essential structure may be very briefly and inadequately sketched as follows. The phenomena of conscious life and behaviour are conceived as the result of the interaction of a number of psychological "forces" which interact according to precisely definable "laws." These forces, which are in part conscious and in part unconscious, may work harmoniously together, or they may conflict with one another. In the latter case an attempt at adjustment occurs, and this attempt may proceed in various possible ways. Certain of these ways involve the repression of one of the opposing forces—that is to say, one of the forces is put out of gear, as it were—and is no longer allowed to manifest itself normally in consciousness or in action It becomes unconscious, but does not thereby cease to exist or to be capable of functioning. It can no longer influence thought and behaviour in a normally direct manner, but it produces various indirect effects. For example, the sex instincts in an elderly unmarried woman, repressed because of their incompatibility with her moral code, and with the circumstances of her life, may express themselves in consciousness as an abnormal interest in births, marriages, and scandals. These indirect effects manifest themselves by means of certain mechanisms which Freud precisely defines, such as compromise, condensation, representation by the opposite, and so forth. Mechanisms of this character are responsible for many phenomena in everyday life, slips of the pen and of speech for instance, for the content of dreams, and for the various symptoms manifested in the psychoneuroses.

It must be understood that the foregoing is only an attempt to describe in general terms the supporting columns on which Freud's theories appear to rest, and does not correspond to the actual way in which these theories were developed. Freud's attack was entirely empirical, and he subjected the psychoneuroses to a prolonged clinical study, only slowly and tentatively building up theoretical conceptions to account for the phenomena which he had observed. It will be noted that, in form at least, this course is entirely irreproachable from the standpoint of the canons of science. After his abandonment of hypnotism as a means of investigation he evolved the method of psycho analysis, and it is by the use of this method that practically all the facts of observation upon which the Freudian theories rest have been collected. We shall have subsequently to describe it, and to evaluate its claim to rank as a trustworthy instrument of research. At present, however, we are concerned with the results of its employment rather than with the instrument itself.

In the course of his psycho-analytic investigations of the phenomena of the psychoneuroses Freud noted that the conflicts underlying the symptoms were invariably conflicts between forces belonging to two radically distinct groups. The first group comprised forces apparently emanating from the sex instincts, the second group forces connected with the personality. To the first Freud gave the name of "libido," to the second that of "the ego," and he conceived that a psychoneurosis developed owing to a certain failure of adjustment between these two or, as he has himself expressed it, "when the ego loses its capacity to deal in some way or other with the libido"[14] In view of the important part played by the libido Freud subjected this to a careful examination in order to determine its precise mode of development, and as a result of this examination he reached the remarkable conclusions constituting the well-known "sex theories." According to these theories sex, as we know it in the adult, is not a function which suddenly emerges at puberty in a manner comparable to the birth of Minerva, but is the final stage in a long process of development starting from the dawn of life. Although its early manifestations are very different from the adult function, the term sexual can justly be applied to the former, because the latter is clearly developed therefrom. Moreover, many tendencies not generally regarded as sexual—for example, parental and filial love, and indeed all the processes to which the word "love" can be applied—must similarly be brought within the sphere of the libido, because they also can be shown to originate from the common fount. The earlier stages in the development of the libido are distinguished by differences both in the objects towards which the libido is directed and in the parts of the body with which the libido is associated, and these differences characterise definite stages through which the libido passes in its progress to adult normality. Thus in the earliest stages the libido is directed on to the individual himself, later on to one or both parents, and only in its final development is it directed on to other persons of the opposite sex. Similarly in earlier stages the libido is associated with other parts of the body than the genitalia—for example, the mouth and anus—and only later does the genital zone assume the primacy which characterises adult sex.

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[13] Freud's chief works are: Studien über Hysterie (with Breuer), 1895, Die Traumdeutung, 1900, Zur Psychopathologie des Alltagslebens, 1901, Drei Abhandlungen zur Sexualtheorie, 1905; numerous shorter papers collected into the Sammlungen kleiner Schriften zur Neurosenlehre, Vorlesungen zur Einführung in die Psychoanalyse, 1917, Jenseits des Lustprinzips 1920 Massenpsychologie und Ich Analyse, 1921; Das Ich und das Es, 1923 Practically all have now been translated into English.

[14] Freud Introductory Lectures on Psycho-analysis, English translation, 1922, p 333

Freud observed that the psychoneuroses were associated with a failure in this process of development, the normal evolution being partially arrested at an early stage. A very important stage in this respect was that at which the libido was directed on to one of the parents, generally the parent of the opposite sex. A failure of adequate development here meant that the libido was fixated at this stage and could not undergo its normal evolution. This fixation was invariably found in certain types of psychoneurosis, and the conflict, which resulted when the claims of later life demanded a normal distribution of the libido, was responsible for the outbreak of the symptoms. In other conditions fixation at other levels were found to be present, and in a word the whole structure and development of the psychoneuroses could be worked out in each individual case by the application of these conceptions.

This description, condensed and generalised to an extent which is hardly consistent with accuracy, will have to serve for our immediate purpose—namely, the estimation of the Freudian theories, both in their form and content, by the canons of scientific method. To begin with, it is clear that with conceptions of this character a goal has been attempted far beyond that achieved by the dissociation conception of Janet. The essential mark of the advance lies in the move forward to a dynamic point of view, and the endeavour to account for the observed phenomena by the action of precise forces working according to precisely definable laws. Similarly the goal attempted is far beyond that reached by the suggestionist and persuasionist schools, because, although suggestion is a dynamic concept, it is immeasurably inferior in precision and manageability to the concepts which Freud has constructed. It is unnecessary to point out, therefore, that Freud's attempt is a very notable one, and if it can be established, either in whole or in part, it must rank amongst the great achievements of the world. The importance of ascertaining how far his methods are consonant with the method of science, and how far the observed facts justify his conclusions, cannot be overestimated, and the magnitude of the issue requires that this should be done with the utmost care and consideration. We may endeavour to approach the problem by a preliminary examination of certain of Freud's fundamental conceptions, and may take in order the conception of the unconscious, the mechanisms, and the sex theories.

### FREUD'S CONCEPTION OF THE UNCONSCIOUS.

The conception of the unconscious is an integral part of Freud's theories. He holds that the processes we term conscious are only a superficial layer, as it were, of the total sum of mental processes. There are two other layers—the preconscious, comprising those processes which, although not conscious at the moment, may at any time become so; and the unconscious, comprising processes which are not only not conscious at the moment, but are prevented from becoming conscious by a barrier only to be circumvented under special circumstances. The unconscious processes are nevertheless able to influence consciousness in various indirect ways. Freud formulates very pre[illegible] the nature, characters, and mode of action [illegible] contained in the unconscious.

The conception of the unconscious has been subjected to much adverse criticism. It is said that it involves a contradiction in terms, as consciousness is the essential character of mental processes, and an unconscious mental process therefore an absurdity; that the processes in question are not psychological at all, but physiological, and that they should be conceived not in terms of consciousness, but in terms of brain. These criticisms arise from a confusion of thought. The unconscious is not a phenomenal reality, but a concept fashioned in order to explain the phenomenal reality. The phenomenal reality, consciousness, obviously forms a disconnected series and, if the psychologist is compelled to take only this into account, he cannot rise beyond the level of a mere description of psychic phenomena. To obtain understanding and continuity it is necessary to go beyond the phenomena and to construct an explanatory concept. The physiologist has, of course, a perfect right to construct for this purpose a concept in terms of brain, but he cannot deny to the psychologist an equal right to construct a concept in psychological terms. The question is not whether one is correct and the other incorrect, but which one works the best in the present state of our knowledge. So far as the phenomena which Freud seeks to explain are concerned, the physiologist cannot yet give an explanation which consists of more than words, and the fact that these words indicate hypothetical material processes rather than hypothetical psychical processes is an inadequate consolation for his entire inability to make any use of the conceptions he fashions. The psychologist is therefore perfectly justified in attempting to find an explanation by the construction of a psychological conception, at any rate until the physiologist can provide one which is practically more useful, and such a conception must involve the assumption of an unconscious in one form or another. If consciousness is defined as the essential attribute of mental processes, then, of course, the "unconscious" becomes a contradiction in terms, but as the question is already begged by accepting the definition this is not of much moment. We saw, when discussing Janet's conception of the subconscious, that there is convincing proof that mental processes exist which are not personally conscious, and such processes are unconscious from the standpoint of the personal consciousness. It may be added that, even if the notion of the unconscious were contradicted by our experience of phenomenal reality, this would not necessarily preclude it from ranking as a scientific concept, because a concept is a construct and not a phenomenal reality. An unconscious mental process, for example, would not be more absurd than a weightless and frictionless ether. Criticisms directed against the unconscious as a possible conception do not carry much weight, therefore, and we have seen that a conception of this kind is necessary if the psychologist is to be allowed to explain the phenomena of consciousness in psychological terms.[15] The question whether Freud's particular conception of the unconscious is valid is, of course, another matter. On the score of method there is no objection whatever to its form and structure, but to satisfy the canons of science it must be shown that it is based on accurately observed facts, that it explains those facts, and that the deductions which follow from it when tested by experience and experiment are always found to be verified. These are the only criteria which have any relevance if the value of Freud's concept is to be satisfactorily estimated.

The mechanisms—that is to say, the modes of action whereby the various intrapsychic forces produce the phenomena they are invoked to explain—need not be considered in detail. Here belong the conceptions of conflict, repression, and the effects upon consciousness and behaviour which a repressed system is capable of producing. This portion of Freud's work has obtained wide acceptance and recognition, extending far beyond the limited circle of Freud's orthodox followers, a circumstance due in some part to the fact that the principles in question were found to be remarkably applicable and illuminating in the study of that great mass of psychoneuroses produced by the war. Here, again, the conceptions are certainly constructed legitimately so far as their form is concerned, and their validity must be determined, as in the case of the unconscious, by an appeal to the facts and to experience.

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[15] Freud's conception of the unconscious differs fundamentally from Janet's "subconscious," and the considerations which justify the one are not applicable to the other. *Cf.* footnote (8).

In contrast with the comparatively favourable reception accorded to the mechanisms, the sex theories have been the subject of most vigorous attack and rejection. Certain criticisms have been based, sometimes explicitly, but more often implicitly, on ethical or æsthetic grounds. Objections of this kind have, of course, no place or relevancy in positive science, and only require to be mentioned in order that they may be at once dismissed. Other criticisms have more weight. It is held that to reduce all the phenomena of the psychoneuroses to the action of the sex instincts is an unduly narrow view, and that other instinctive forces without admixture of sex elements are equally capable of causing these disorders. It would seem, for example, that the psychoneuroses of the war were certainly due to intrapsychic conflicts, but to conflicts between forces in which sex played no part. We shall see subsequently that the Freudian school has met this latter objection with regard to the war psychoneuroses by a further extension of the already wide denotation ascribed to sex. For the moment, however, it is merely necessary to note that disputes of this kind can only be settled by an appeal to the facts of observation, and not by a priori considerations. A generalisation is unduly wide only if it can be shown that the facts do not fit into it, and it is no more inherently impossible that the sex instinct should account for all the phenomena of the psychoneuroses than that so simple a principle as gravity should account for all the movements of the planets. Once more, therefore, we are led to the conclusion that we cannot quarrel with the form in which Freud's sex theories are cast, and that they are legitimate attempts to explain the facts. As in the cases of the unconscious and of the mechanisms, the crux of the matter is whether these conceptions do fit the facts, and fit them in a manner satisfactory to the canons of science. It is unfortunately necessary to labour this simple and obvious point, because many critics of Freud appear to forget that all theories can only be appraised by an examination of the facts, and that, just as a theory can only be legitimately constructed on the careful observation and recording of phenomena, so it can only be destroyed by recapitulating the observations or, as it were, making control experiments. This essential work is often altogether neglected, and its place taken by ex cathedra statements, whose foundations in prejudice are sometimes only too obvious. An examination at the level of the facts of observation, therefore, must clearly be the chief task in any reasonable attempt to judge the value of Freud's conceptions.

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THE LATE DR. G. E. GABITES, O.B.E.—News has been received of the death on Jan. 5th of Dr. George Edward Gabites, a well-known member of the medical profession in South Canterbury, New Zealand. He was born in Christchurch in 1867, and after being educated locally, went to Edinburgh, where he graduated in science at the University in 1891, proceeding to the M.B., C.M. three years later. He was appointed resident physician at the Royal Infirmary and later became resident surgeon at the Royal Maternity and Simpson Memorial Hospital, and medical superintendent at the Edinburgh Provident Dispensary. In 1898 he obtained the Fellowship of the Royal College of Surgeons of Edinburgh and in 1899 was appointed surgeon superintendent of the Timaru Hospital, New Zealand. Subsequently he served in the South African War with the New Zealand contingent and for his services was awarded the Queen's Medal with four clasps. During the late war he was Captain Commandant of the N.Z. Medical Corps in the training camp at Arapuni, and was A.D.M.S of the Otago military district. Dr. Gabites leaves a widow and two sons.

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# THE TREATMENT OF ILEUS BY CHOLINE.

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WHILE engaged in an investigation of the rhythmic movements of the small intestine in 1912 Weiland made the chance observation that when a piece of isolated intestine was allowed to contract in Ringer's solution for some time the fluid acquired the property of exciting contraction in other pieces of intestine placed in it. Le Heux, another worker in Magnus's laboratory in Utrecht, isolated the substance causing this effect and identified it as choline. This base has come into prominence at various times in physiological literature and is related chemically to muscarine, the principle found in poisonous mushrooms. Le Heux was able to transform the small amount of choline obtained into acetyl choline, and obtained the powerful physiological effects observed by Reid Hunt and by Dale.

It is known that when the alimentary canal is nearly completely cut off from its central nervous supply by severing both vagi and both splanchnic nerves digestion proceeds almost undisturbed. The normal rhythmic movements of the gastro-intestinal canal continue without hindrance. The plexus of nerves known as Auerbach's plexus, existing between the longitudinal and circular layers of the musculature of the intestine, evidently receives its stimulus elsewhere than centrally.

We know that the rhythmic movements of respiration are initiated by changes in carbon dioxide or hydrogen-ion concentration in the blood. It was the analogy with the action of carbon dioxide which led Magnus to conclude that choline acts as the hormone of intestinal movement. That choline is specific in its action on the intestine is shown by the fact that it does not affect the rhythmicity of the heart or of the uterus.

The origin of choline is still unknown. Neither the food nor the suprarenals appear to be the source of the base. The intestine endeavours to retain its store of choline, and it is found in the intestinal wall even in conditions such as prolonged chloroform narcosis and peritonitis. It is known that the salts of acetic and pyruvic acids stimulate peristalsis strongly and the reason for this action is now clear. It is the choline esters of these two organic acids which have a powerful effect on intestinal movement; indeed, the acetic ester of choline is 1000 times as powerful as the base itself in exciting peristalsis. It would seem, therefore, that the acid radicle couples up with choline in the intestinal wall and produces an effect which has hitherto been ascribed to the acetate or to the pyruvate alone.

In a series of articles by workers in Magnus's laboratory it was shown that paralysis of the bowel produced in cats by long-continued chloroform narcosis was speedily relieved by the intravenous injection of 5–15 mg. of choline per kilo body-weight of choline hydrochloride. Strong gastro-intestinal movement, as seen by X ray photographs, took place almost immediately, followed by evacuations in the following 20 hours.

Arai brought about peritonitis in cats by the intraperitoneal injection of iodine solution. Depending on the dose, any degree of ileus could be produced. The paralysis was overcome by an injection of choline. The production of a typical operative ileus in animals simulating that seen in man was successfully imitated by exposing the intestines of an animal to the air through an abdominal incision combined with manipulation. In such cases no evacuation of fæces

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* Assisted by a grant from the Medical Research Council.

took place in 30 hours unless choline was administered. When this was done a normal stool followed in a short time.

Finally, Arai produced a severe infective peritonitis in cats by the injection of a mixture of *B. coli* and staphylococci. In those animals which survived there occurred intestinal paralysis. The injection of choline resolved the ileus. An analysis of the intestinal wall showed that a normal content of choline was present. The paralysis was due to a lessened sensitivity of Auerbach's plexus. Only when the choline content of the blood was raised above the normal did this nerve system respond with increase of tonus and peristaltic movement.

Following on the work of Arai, Magnus investigated the toxicity of choline with a view to using it therapeutically. It was found that the safe dose in cats by intravenous administration was 20 mg. per kilo. Much larger concentrations were borne when the drug was injected intravenously at a slow rate. When injected in the amount of 0·8 mg. per kilo per minute large amounts could be borne without the least distress. The work of Le Heux shows that choline hydrochloride solutions decompose and become toxic unless they are specially prepared and kept in ampoules of resistant glass. Messrs. Merck put up the sterile solution in ampoules in a way which fulfils the requirements of Magnus and Le Heux. When properly prepared the solutions will remain undecomposed for at least four years.

The administration of choline in cases of ileus was taken up by Klee and Grossmann in Romberg's clinic in Munich and a report presented at the Congress for Internal Medicine in Vienna in 1923. It was used in peritonitis, in chronic atony of the stomach and intestines, and in atonic constipation. In all these cases its use was successful. Its value in nervous dyspepsia could be accounted for by the fact that treatment of decerebrate cats with choline did not permit subsequent inhibition of the stomach movements by stimulating the sympathetic.

Through the kindness of Prof. Magnus, one of us was given a supply of choline hydrochloride and with it the following cases have been treated. The number is small, but, as far as we are aware, no reports of its use have appeared in England. It was thought it would be of service to give the results of its administration.

### *Clinical Records.*

CASE 1.—Mrs. S., aged 47. On March 21st, 1923, panhysterectomy was performed for a very large fibroid uterus filling the whole pelvis and extending 1¼ in. above the umbilicus. 24th: Much distension and pain for past 24 hours. Frequent vomiting with slight rise of temperature. Several high enemata with turpentine failed to relieve, and no flatus was passed. That evening the incision was reopened, and a considerable amount of slightly blood-stained peritoneal fluid was evacuated. The large intestine was hardly distended, but the coils of small intestine which presented were very much so. It was found that after removal of the pelvic tumour its place had been taken by quite half the small intestine. This also was distended and to some extent imprisoned in the pelvis. The mesentery had become much stretched, especially over the sacral prominence, and there were signs of early thrombosis in the mesentery which was œdematous. The coils were freed and the incision closed. 25th: No improvement. Choline administered with no effect, the patient dying the same night.

*Summary.*—A case of intestinal paralysis due to distension and partial fixation of coils of small intestine which, after removal of a large pelvic tumour, had taken its place. Choline was administered when it was proved by exploration that intestinal obstruction was absent. The administration was too long postponed and no chance therefore was given to test its value.

CASE 2.—Mrs. G., aged 75. June 21st, 1923: Panhysterectomy was performed for adenocarcinoma and the patient stood the operation exceedingly well. 23rd: The patient did well to date, but was getting uncomfortable with distension. Pituitrin followed by enemata resulted in the passage of small quantities of flatus only. 24th: Further enemata after [illegible] of eserine failed to produce any result, and the [illegible] getting exceedingly distressed. At 6 P.M. choline was administered. Immediately afterwards she complained that she was soiling the bed. This was so, but only to a slight extent. During the night colicky pain was very much complained of, and a gravitation enema early next morning produced a fair result. Eserine and enemata were persevered with and the bowels commenced to act well. She made an uninterrupted recovery and is now, two and a half years later, in perfect health.

*Summary.*—A case of ileus following prolonged and severe operation in an elderly stout woman. Choline appeared definitely to restore muscular tone and contraction in the intestinal wall.

CASE 3.—Mrs. R., aged 38. Sept. 23rd, 1924. This patient had had a precipitate labour on the previous day and was admitted to hospital as a case of acute intestinal obstruction. She complained of much abdominal distension, and for 24 hours no flatus had passed in spite of enemata. She had vomited twice. She stated that she felt well except for abdominal uneasiness. The abdomen was greatly distended, but there was no rigidity. Numerous coils of much distended gut could be seen through a thin abdominal wall. That afternoon the patient vomited again. In the evening, as the pulse had risen and an enema had failed to produce even flatus, it was decided to explore, though her general condition as a whole remained excellent. It was thought advisable not to await the onset of a more critical condition. A mesial hypogastric incision was made and the whole intestine was found uniformly distended. No cause of obstruction could be detected. A large rectal tube was passed a good 18 inches, aided by a hand over the pelvic colon within the abdomen. Much fluid fæces and flatus were passed by this means before the patient left the table. 24th: The distension was as great as before, but the general condition remained good. Enemata through the rectal tube, still in situ, failed to produce any result. 25th: The same condition as on the previous day with no relief of symptoms and signs. 4.30 P.M., choline administered. Within 20 minutes of the administration ending a copious motion was passed, followed by another later in the evening. 28th (three days after choline): The bowels had been acting normally for two days with the aid of mild laxatives.

*Summary.*—A case of pure ileus following the sudden emptying of the abdomen of a large tumour (full term ovum). At first thought to be an acute intestinal obstruction. This disproved by abdominal section. Choline immediately re-established intestinal function after all other remedies had failed over the space of three days.

CASE 4.—Mrs. M., aged 34. Dec. 2nd, 1924: The patient was admitted to hospital as an emergency at the end of her eighth month of pregnancy, as there had been irregular losses throughout pregnancy and she was bleeding freely at the time. The cervix admitted one finger and a central placenta prævia could be felt. There were no pains. It was thought that the best treatment was immediate delivery by Cæsarean section, and she stood the operation exceedingly well. 6th: Patient has had considerable colicky pain requiring morphia. 7th: There was much vomiting and great distension with a rapid poor-volume pulse. A turpentine gravitation enema following 0·5 c.cm. of pituitrin, though producing a slight result, did not relieve either the distension or the distress. 9 P.M.: Choline given. Some flatus passed during the night. 8th: Pituitrin 0·5 c.cm. and eserine gr. 1/100, followed by a turpentine enema, produced a good result. 9th: The same good result followed similar treatment. By the next day the normal intestinal function had become established.

*Summary.*—An otherwise healthy woman suffering from acute ileus as the result of suddenly emptying the abdomen of a large tumour (full term ovum) by abdominal section. Choline re-established the normal intestinal function within 36 hours.

### *Conclusion.*

The administration of choline is a simple matter. Sterile choline hydrochloride is put up in glass ampoules containing 600 mg. in 6 c.cm. This solution is diluted with 180 c.cm. of sterile normal saline and the resulting solution injected intravenously. An important point in administration is that it should take at least 17 minutes to inject the whole quantity. On every occasion except one an ordinary saline infusion apparatus with a narrow intravenous needle was used.

(*References at foot of next page.*)

# THE AMOUNT OF ANTITOXIN TO STREPTOCOCCUS SCARLATINÆ PRESENT IN THE BLOOD OF CONVALESCENT SCARLET FEVER CASES.

A REPORT TO THE MEDICAL RESEARCH COUNCIL.

BY HERBERT HENRY, M.D. LOND.,
AND
F. C. LEWIS, M.R.C.S. ENG.
*(From the City of Birmingham Bacteriological Laboratories.)*

IN a previous report[1] it has been shown that a ready means of obtaining the toxin of *Streptococcus scarlatinæ* consists in the preparation of "floating" surface cultures of the organism on serum agar Roux bottles, and in the separation of the condensation water from these after 24 hours' incubation. At this period in our observations there was little evidence from American sources in regard to the stability of the toxin, apart from its apparently remarkable resistance to heat, and we deemed it necessary to make attempts to obtain the toxin in dried form. As a result of these experiments it was found that fractional precipitation with alcohol provided in dried form a toxin of considerable concentration, and subsequent experience with products so prepared and kept in desiccators over sulphuric acid has proved that these sustain no detectable loss in potency over a period of ten months.

TABLE A.—*Scarlet Fever Convalescent Children.*

| No | Sex. | Age. | Day of disease. | Blood-group | Amounts of serum titrated against five skin test doses. | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0·1 | 0·04 | 0·02 | 0·01 | 0·004 |
| 2 | F. | 12 | 33 | 1 | − | − | − | + | + |
| 3 | F. | 11 | 20 | 3 | − | − | + | + | + |
| 5 | F. | 5 | 26 | 2 | − | − | + | + | + |
| 6 | F. | 5 | 30 | 2 | − | + | + | .. | .. |
| 7 | F. | 10 | 30 | 4 | − | − | − | + | + |
| 27 | M. | 13 | 24 | 4 | − | − | − | + | + |
| 30 | M. | 10 | 31 | — | − | − | − | + | + |
| 31 | F. | 8 | 63 | 2 | − | − | − | + | + |
| 38 | M. | 6 | 47 | 2 | − | + | + | .. | .. |
| 39 | M. | 12 | 28 | 2 | − | + | + | .. | .. |
| 40 | M. | 8 | 24 | 3 | − | − | + | .. | .. |
| 41 | M. | 8 | 23 | 2 | − | + | + | .. | .. |
| 43 | F. | 11 | 40 | 1 | − | − | + | .. | .. |
| 44 | M. | 11 | 49 | 2 | − | + | + | .. | .. |
| 45 | M. | 6 | 32 | 3 | − | + | + | .. | .. |
| 48 | M. | 9 | 24 | 3 | − | + | + | .. | .. |
| 49 | M. | 7 | 33 | 1 | + | + | + | .. | .. |
| 51 | F. | 11 | 44 | 2 | − | + | + | .. | .. |
| 53 | M. | 5 | 36 | 2 | + | + | + | .. | .. |
| 55 | M. | 4 | 42 | 2 | + | + | + | .. | .. |

A particular specimen of toxin prepared in the way just referred to was then used for intradermal test on a large number of individuals[2] each of whom was submitted not to one dose of toxin but to a small series of graduated dilutions. The advantage of this multiple dose titration lies in that it gives information not only that an individual may be resistant to one particular dose of toxin, as does the ordinary Dick test, but that it also affords a rough measure of the degree of resistance of that individual and assigns to him a position on an immunity scale. The method, therefore, has enabled us to classify individuals as coming into one or another of a series of "immunity groups." Those who react positively to the smallest amount of toxin in the scale of titration—viz., 1 unit—are the most susceptible and are said to belong to Group VI., whereas those who react negatively to 16 units are the most resistant of all and are aggregated in Group I.

Such a classification, resting as it does on the hypothesis that the degree of reaction to the toxin affords an index of the degree of immunity, is justified only if the assumption is proved to be correct. That this is so we were able to show in our previous report, for we found that the blood of four susceptible individuals contained little or no antitoxin, whereas the blood of four resistant individuals contained antitoxin in considerable amounts.

The present report concerns itself with an amplification of these last-mentioned experiments and deals with an attempt to determine the antitoxin content of a series of 40 specimens of blood, collected in the Birmingham City fever hospitals, half being taken from children who were convalescent from scarlet fever, the other half from children in whom there was, as far as could be ascertained, no previous history of this disease. Toxin reactions had not been done on these children, so that there is no evidence from this source to correlate with our observations. There was no selection of cases except in so far as to exclude (1) adults, and (2) children in which the diagnosis was doubtful on clinical grounds.

TABLE B.—*Non-Scarlet Fever Children.*

A.S. = Amounts of serum titrated against five skin test doses.

| Number. | Sex and age. | Blood-group. | A.S. | | | | Number. | Sex and age. | Blood group | A.S. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0·1 | 0·04 | 0·02 | 0·01<br>0·004 | | | | 0·1 | 0·04 | 0·02 | 0·01<br>0·004 |
| 9 | M.<br>8 | 2 | + | + | + | .. | 20 | F.<br>9 | 4 | + | + | + | .. |
| 10 | M.<br>11 | 1 | − | − | − | + | 21 | F.<br>9 | 1 | + | + | + | .. |
| 11 | M.<br>6 | 2 | − | + | + | .. | 22 | F.<br>7 | 1 | + | + | + | .. |
| 12 | M.<br>11 | 2 | − | + | + | .. | 23 | F.<br>12 | 2 | + | + | + | .. |
| 13 | M.<br>10 | 1 | + | + | + | .. | 24 | F.<br>8 | 1 | + | + | + | .. |
| 14 | F.<br>14 | 2 | + | + | + | .. | 32 | F.<br>11 | 1 | + | + | + | .. |
| 15 | M.<br>11 | 1 | − | + | + | .. | 33 | F.<br>10 | 1 | − | − | + | .. |
| 16 | M.<br>5 | 1 | − | + | + | .. | 34 | F.<br>8 | 1 | + | + | + | .. |
| 17 | M.<br>11 | 3 | + | + | + | .. | 35 | F.<br>12 | 2 | + | + | + | .. |
| 19 | F.<br>10 | 1 | − | − | + | .. | 37 | M.<br>7 | 1 | − | + | + | .. |

## *Technique.*

To the serum separated from clotted blood by centrifuging there was added trikresol in the proportion of 0·35 per cent. Each sample, placed in a rubber-corked tube, was then stored in the cold room for three to ten days before use. Toxin-antitoxin mixtures were made by adding 0·5 c.cm. of toxin containing 25 skin test doses (or 50 units) *to 0·5 c.cm. of* serum in a series of dilutions. The specimen of toxin employed was the same as that used in previously recorded experiments.[2] The amounts of serum in each total mixture of 1·0 c.cm. were as follows: 0·5, 0·2, 0·1, 0·05, and 0·02 c.cm. The mixtures were made up and kept at 37° C. for one hour immediately before use. The actual dose of each mixture used for intradermal inoculation amounted to 0·2 c.cm., so that it consisted of five skin test doses of toxin mixed with one-fifth of the volume of serum just mentioned.

As there is not yet a satisfactory animal test for the estimation of the toxin of *Streptococcus scarlatinæ*,

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[1] Henry, H., Lewis, F. C., and Others: On the Toxin of *Streptococcus Scarlatinæ*, THE LANCET, 1925, i., 710.

[2] Henry, H., and Lewis, F. C.: On Immunity to the Toxin of *Streptococcus Scarlatinæ*, THE LANCET, 1925, ii., 587.

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*(Continued from previous page.)*

## DR. WOLF AND MR. CANNEY. REFERENCES.

Weiland: Pflüger's Archiv, 1912, cxlvii., 171.
Le Heux: Pflüger's Archiv, 1918, clxxiii., 3.
Hunt and Taveau: U.S. Public Health and Marine Hospital Service, 1911, Bull. 73.
Dale: Jour. Pharmacol. and Exper. Therapeutics, 1914, vi., 146.
Magnus: Die Naturwissenschaften, 1920, Heft 20.
Arai: Pflüger's Archiv, 1922, cxcii., 359; Archiv f. Exper. Pathol. u. Pharmakol., 1922, xciv., 149.
Le Heux: Archiv der Pharmazie, 1924, Heft 6.
Klee and Grossmann: Verhandlungen der Kongress f. innere Medizin, 1923.

recourse must be had to human skin. The only human individuals possessing skin suitable for the test are those who are sensitive to small amounts of toxin—i.e., those who are classified together in Groups V. and VI. These comprise the bulk of children of junior school age who have not had scarlet fever and a small proportion of ordinary adult males and females. There are many reasons why this large series of tests should not be carried out on children, and we were fortunate in having at our disposal an adult male who was eager that we should use him as much as we should consider necessary. This lucky circumstance we gladly seized upon, as it gave us the opportunity of estimating in a short space of time the antitoxic titre of the 40 sera, and, moreover, it afforded us strictly comparable findings as between one serum and any other throughout the whole series, a result which would have been unattainable had use been made of a number of suitable volunteers.

The whole period taken up by the inoculations occupied 14 days, a batch of five to ten sera being given at one time and followed by one or two days of rest. Readings were taken 24 hours after inoculation, and are recorded as follows :—

+ = a reaction equal to or larger in area than that covered by one skin test dose.

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Except for slight dissociation in the case of the first five sera to be tested, no difficulty was experienced in reading reactions until we reached the last quarter of the series. Then it became apparent that the individual whom we were inoculating was reacting to some constituent of the toxin other than the toxin itself. A series of tests showed him to be sensitive to rabbit serum and also to some ingredient of the condensation water taken from salt agar tubes which contained no peptone or meat extract. The combination of these two factors resulted in the production of what may be termed a pseudo-reaction which tended to mask the negative reactions and also to emphasise the positive ones. It would appear, therefore, that an increased susceptibility to a pseudo-reaction must be borne in mind in interpreting the results of a large series of inoculations in any one individual. In this particular instance the reactions obtained at the end of the series were still readable, though with difficulty, and we do not feel that the individual could be profitably used for further injections of a similar character until he has lost his sensitiveness.

### *Results.*

The findings in respect of the reactions in individual scarlet and non-scarlet children are set out in Tables A and B respectively. The results show that the differentiation between these two groups in regard to their antitoxin content is as follows :—

1. If the unit of antitoxin be taken as that amount which gives complete neutralisation of one skin test dose, then out of 20 scarlet fever children 17 were found to yield a serum which contained 50 units or more of antitoxin, whereas of the non-scarlet children only eight reached this titre. 2. Of the 20 scarlet children nine yielded a serum containing 125 units or more, whereas only three of the non-scarlet children did so. 3. The 250 unit level was reached by five scarlet children and by one non-scarlet child.

The blood groupings of these children were determined for a purpose other than that with which the present report concerns itself. It is of some interest, however, to note that, although the distribution of the groups taken throughout the whole collection of sera approximates the normal, yet there would seem to be a preponderance of Group II. individuals among the scarlet fever convalescent children and of Group I. individuals in the non-scarlet series.

Our [illegible] ks are due to Dr. E. H. R. Harries for the [illegible] ods.

# HERPES ZOSTER OTICUS AND ALLIED CONDITIONS,

## WITH NOTES OF THREE CASES.

By THOMAS GUTHRIE, M.B., B.C. Camb., F.R.C.S. Eng.,
HON. LARYNGOLOGIST TO THE LIVERPOOL ROYAL INFIRMARY; HON. LECTURER IN LARYNGOLOGY, LIVERPOOL UNIVERSITY.

Herpes zoster of the skin of the auricle was described and figured many years ago. In the second edition of Gruber's book on the ear, published in 1890, mention is made of its association with nerve deafness, while Politzer, in the fourth edition of his text-book (1902), refers to facial palsy as yet another feature of some of these cases. But the credit for the first complete description of the interesting syndrome, known to-day as herpes zoster oticus, is due to J. Ramsay Hunt, to whose writings I am indebted for much of what follows. In 1907 and 1908 he gave a detailed account of the disease and its complications based on four cases observed by himself, together with 56 others collected from the literature.

It is well known that herpes zoster affecting an area on the trunk or limbs is due to an inflammation of one or more of the ganglia of the posterior or sensory roots of the spinal nerves. These ganglia contain cells of the unipolar type, and with the sensory or afferent portion of certain of the cranial nerves are associated ganglia containing similar unipolar cells, and clearly representing posterior root ganglia. One of these is the geniculate ganglion of the facial nerve. This ganglion receives its afferent fibres from the sensory portion of the nerve which consists not only of the chorda tympani, but also of fibres from a certain well-defined area of skin. These are incorporated in the auriculo-temporal branch of the third division of the fifth nerve and in the auricular branch of the vagus, and reach the ganglion through its connexions with these nerves.

The area of skin affected by herpetic inflammation of the geniculate ganglion is intercalated between the areas affected in herpes occipito-collaris and in herpes facialis, which are due respectively to disease of the upper cervical and of the Gasserian ganglia. The vesicular eruption is limited to " a cone-shaped area with its apex on the tympanic membrane and its base of the auricle " (Hunt), consisting of the tympanic membrane, external auditory meatus, concha, tragus, antitragus, lobe (outer surface), antihelix, and fossa antihelicis.

As the motor fibres of the facial nerve are closely applied to the ganglion the inflammatory process readily spreads to these, and the result is facial paralysis, which was noted in all the cases of herpes zoster oticus collected by Ramsay Hunt. Often the inflammation extends further and affects both the cochlear and the vestibular portions of the eighth nerve, causing nerve deafness, tinnitus, vertigo, and vomiting. This occurred in 19 of Hunt's cases. Moreover, just as in herpetic inflammation of the spinal ganglia, while one ganglion is chiefly affected, those on either side of it tend to suffer in a less degree, so in certain cases, presenting some or all of the ordinary features of geniculate ganglion disease, there may be also indications of coincident herpetic inflammation of other ganglia, such as the Gasserian or the second, third, and fourth spinal ganglia. It is probable indeed that occasionally the eighth nerve ganglia of Corti and Scarpa are *directly* affected, since these ganglia are developmentally homologous with posterior root ganglia. The resulting symptoms (deafness, vertigo, &c.) will then be clinically indistinguishable from those met with in typical cases of herpes zoster oticus in which the *trunk* of the eighth nerve is affected by inflammation spreading from the geniculate ganglion. In this way are probably to be explained certain cases of herpes occipito-collaris and herpes facialis with eighth nerve symptoms, but without geniculate ganglion involvement.

Herpes zoster oticus is a rare condition. It is met with in about 1 in 20,000 cases of ear disease Pain about the pinna and mastoid region may be severe and may be present for two or three days before the eruption appears It was the first symptom in one of my cases, and in another was preceded by the vertigo It is sometimes present also in the distribution of the upper cervical and the fifth nerves, due to coincident inflammation of the corresponding ganglia, or in the case of the fifth nerve to its connexion with the geniculate ganglion through the great and small superficial petrosal nerves

As the eruption affects the tympanic membrane and skin of the meatus as well as the pinna, there may be, two or three days after it has appeared, much inflammatory swelling of the meatal walls with otorrhœa and sometimes secondary swelling of the mastoid lymphatic gland These appearances, together with the intense pain, deafness, facial palsy, and sometimes pyrexia, are very suggestive of acute otitis media with mastoiditis, for which cases of herpes zoster oticus are occasionally mistaken Points of importance in the diagnosis are (1) the nature and distribution of the eruption; (2) the type of the deafness—namely, inner- and not middle-ear deafness; (3) loss of taste in the corresponding side of the tongue, owing to affection of the chorda tympani nerve; (4) absence of perforation of the tympanic membrane, although its appearance may be much altered by the eruption, and, in any case, an intact drum does not of course exclude disease of the middle ear

The duration of the disease varies considerably Some degree of neuralgic pain usually persists for two or three weeks. The facial paralysis may be evanescent, lasting only a few days, or it may disappear gradually during the course of some weeks The same applies to the deafness and other symptoms of eighth nerve involvement. In rare cases some degree of facial palsy and nerve deafness is permanent

Treatment consists of sedatives for the pain, the usual local applications for the herpetic eruption, and massage and electrical treatment for the paralysis if this persists

### *Clinical Records*

The following are brief notes of three cases which I have observed, the first two being characteristic examples of herpes zoster oticus, and the third a case of herpes facialis with eighth nerve symptoms.

CASE 1—A man, aged 56, whom I saw at the request of Dr John Hay, was in bed suffering from vertigo and vomiting, which began ten days before I saw him. For eight days there had been pain in and about the left ear and a vesicular eruption had developed on the pinna. Three or four days after the onset of the pain left facial palsy had appeared. His temperature had varied between normal and 103°F for the first three days of the illness. When I examined him he still complained of giddiness on attempting to walk, and some pain, though much less than a few days before. There was almost complete left facial paralysis, and the left concha showed an eruption consisting of crusts and drying vesicles and pustules. The meatal skin was somewhat swollen and presented the remains of a similar eruption while the tympanic membrane was grey in colour and desquamating The hearing of the right ear was normal, that of the left very defective In the left ear Rinné's test was positive and much shortened, the sound of a tuning fork on the vertex was referred to the good ear, and bone conduction was greatly diminished.

CASE 2.—A man of 28, sent to the Liverpool Royal Infirmary by Dr G S Swan, of Rock Ferry For ten days he had suffered from right-sided facial palsy (complete at first but now diminishing), vertigo with a tendency to fall and walk to the left, and deafness of the right ear More recently he had noticed a moderate degree of pain about the ear with tenderness and sores on the pinna. Examination showed incomplete right facial paralysis, a few small crusts, apparently the remains of herpetic vesicles, on the pinna an opaque and slightly desquamating tympanic membrane, and almost complete loss of taste on the right side of the tongue. There was also marked nerve deafness of the right ear, a watch being heard on contact only, Rinné's test positive, and bone conduction for a C 128 fork 20 seconds below normal He still complained of some vertigo and showed a tendency to stagger towards the left on attempting to walk with eyes closed.

CASE 3—A woman of 33 had suffered four weeks before I saw her from intense pain in the right side of her face. Three days later she had a sudden attack of vertigo and vomiting and became deaf in the right ear On the following day a vesicular rash appeared on the right side of the forehead and chin and on the right cheek. The neck and pinna were unaffected and facial palsy was completely absent. On examination there was found marked nerve deafness of the right ear with great loss of bone conduction much lowering of the upper tone limit, and relatively good hearing for low tones No trace of eruption was to be seen either on the tympanic membrane, the meatal skin, or the auricle. The vertigo, which had been sufficiently severe to confine the patient to bed for a fortnight, had, when I saw her, almost subsided, leaving only a sensation of unsteadiness. Six weeks later the hearing of the affected ear had undergone much improvement, but still remained somewhat below normal

As already mentioned, Cases 1 and 2 are fairly typical examples of herpes zoster oticus, and it is easy to understand that a case such as the first of these might, on a cursory examination, be mistaken for one of acute otitis media with labyrinth complications An error of this kind is to be avoided by a careful consideration of all the facts, and by bearing in mind the occasional occurrence of Ramsay Hunt's syndrome

The third case, although it was not one of herpetic inflammation of the geniculate ganglion, seemed to me worthy of record because it illustrates an allied condition which is referred to by Ramsay Hunt as herpes facialis with acoustic complications In cases of this sort the principal seat of the herpetic inflammation is in the Gasserian ganglion, to whose zone the eruption is limited, while the absence of facial palsy and of eruption in the zoster zone of the geniculate ganglion suggests that the labyrinth symptoms (deafness and vertigo) are due to herpetic inflammation of the eighth nerve ganglia of Corti and Scarpa, which are to be regarded, like the geniculate, as true posterior root ganglia

*References.*—On Herpetic Inflammation of the Geniculate Ganglion: A New Syndrome and its Complications, by J Ramsay Hunt, Journal of Nervous and Mental Diseases, February, 1907 A Further Contribution to the Herpetic Inflammations of the Geniculate Ganglion A Syndrome Characterised by Herpes Zoster Oticus Facialis, or Occipitalis, with Facial Palsy and Auditory Symptoms, by the same Author American Journal of Medical Science, August, 1908

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MANCHESTER HOSPITALS.—At the annual meeting of the Manchester and Salford Hospital for Skin Diseases, held on March 17th, it was stated that the hospital did not receive adequate support from towns outside its own immediate area. During the past year the number of patients from Manchester was only 40 per cent. of the total, and the number from Salford 15 per cent., the remaining 30 per cent. coming from outside towns. From Ashton-under-Lyne there came 788 patients, from Bolton 851, from Oldham 930, from Stretford 1074, and from Stockport 1265 Nearly all the private subscriptions, however, came from Manchester Patients came from 430 towns and villages, but the amount of private subscriptions that came from these towns and villages was very small.—A new nurses home which has cost £15,354 was formally opened on March 17th in connexion with the Hope Hospital, Salford At the hospital the accommodation of all kinds has been more than trebled There are now 238 bedrooms instead of 72, and 25 public and private sitting rooms instead of 5 During the war the nursing staff was 78 in number; now it is 158 Up to 1920 the staff worked 70 and 80 hours a week. They now work an eight-hour day—Owing to the inadequacy of the premises of the Manchester Northern Hospital for Women and Children a public meeting was held on March 16th in support of an appeal for £150 000 to build a new hospital. A site has been given by Sir Edward Holt in Cheetham Hill road What it is proposed to erect is a building which will accommodate 200 beds and cots, for an out-patient department, and a nurses home Up to the present £31,020, which sum includes £10,230 from the general fund, has been subscribed recourse must be had to human skin. The only human individuals possessing skin suitable for the test are those who are sensitive to small amounts of toxin—i.e., those who are classified together in Groups V. and VI. These comprise the bulk of children of junior school age who have not had scarlet fever and a small proportion of ordinary adult males and females. There are many reasons why this large series of tests should not be carried out on children, and we were fortunate in having at our disposal an adult male who was eager that we should use him as much as we should consider necessary. This lucky circumstance we gladly seized upon, as it gave us the opportunity of estimating in a short space of time the antitoxic titre of the 40 sera, and, moreover, it afforded us strictly comparable findings as between one serum and any other throughout the whole series, a result which would have been unattainable had use been made of a number of suitable volunteers.

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Herpes zoster of the skin of the auricle was described and figured many years ago. In the second edition of Gruber's book on the ear, published in 1890, mention is made of its association with nerve deafness, while Politzer, in the fourth edition of his text-book (1902), refers to facial palsy as yet another feature of some of these cases. But the credit for the first complete description of the interesting syndrome, known to-day as herpes zoster oticus, is due to J. Ramsay Hunt, to whose writings I am indebted for much of what follows. In 1907 and 1908 he gave a detailed account of the disease and its complications based on four cases observed by himself, together with 56 others collected from the literature.

It is well known that herpes zoster affecting an area on the trunk or limbs is due to an inflammation of one or more of the ganglia of the posterior or sensory roots of the spinal nerves. These ganglia contain cells of the unipolar type, and with the sensory or afferent portion of certain of the cranial nerves are associated ganglia containing similar unipolar cells, and clearly representing posterior root ganglia. One of these is the geniculate ganglion of the facial nerve. This ganglion receives its afferent fibres from the sensory portion of the nerve which consists not only of the chorda tympani, but also of fibres from a certain well-defined area of skin. These are incorporated in the auriculo-temporal branch of the third division of the fifth nerve and in the auricular branch of the vagus, and reach the ganglion through its connexions with these nerves.

The area of skin affected by herpetic inflammation of the geniculate ganglion is intercalated between the areas affected in herpes occipito-collaris and in herpes facialis, which are due respectively to disease of the upper cervical and of the Gasserian ganglia. The vesicular eruption is limited to "a cone-shaped area with its apex on the tympanic membrane and its base of the auricle" (Hunt), consisting of the tympanic membrane, external auditory meatus, concha, tragus, antitragus, lobe (outer surface), antihelix, and fossa antihelicis.

As the motor fibres of the facial nerve are closely applied to the ganglion the inflammatory process readily spreads to these, and the result is facial paralysis, which was noted in all the cases of herpes zoster oticus collected by Ramsay Hunt. Often the inflammation extends further and affects both the cochlear and the vestibular portions of the eighth nerve, causing nerve deafness, tinnitus, vertigo, and vomiting. This occurred in 19 of Hunt's cases. Moreover, just as in herpetic inflammation of the spinal ganglia, while one ganglion is chiefly affected, those on either side of it tend to suffer in a less degree, so in certain cases, presenting some or all of the ordinary features of geniculate ganglion disease, there may be also indications of coincident herpetic inflammation of other ganglia, such as the Gasserian or the second, third, and fourth spinal ganglia. It is probable indeed that occasionally the eighth nerve ganglia of Corti and Scarpa are *directly* affected, since these ganglia are developmentally homologous with posterior root ganglia. The resulting symptoms (deafness, vertigo, &c.) will then be clinically indistinguishable from those met with in typical cases of herpes zoster oticus in which the *trunk* of the eighth nerve is affected by inflammation spreading from the geniculate ganglion. In this way are probably to be explained certain cases of herpes occipito-collaris and herpes facialis with eighth nerve symptoms, but without geniculate ganglion involvement.

Herpes zoster oticus is a rare condition. It is met with in about 1 in 20,000 cases of ear disease. Pain about the pinna and mastoid region may be severe and may be present for two or three days before the eruption appears. It was the first symptom in one of my cases, and in another was preceded by the vertigo. It is sometimes present also in the distribution of the upper cervical and the fifth nerves, due to coincident inflammation of the corresponding ganglia, or in the case of the fifth nerve to its connexion with the geniculate ganglion through the great and small superficial petrosal nerves.

As the eruption affects the tympanic membrane and skin of the meatus as well as the pinna, there may be, two or three days after it has appeared, much inflammatory swelling of the meatal walls with otorrhœa and sometimes secondary swelling of the mastoid lymphatic gland. These appearances, together with the intense pain, deafness, facial palsy, and sometimes pyrexia, are very suggestive of acute otitis media with mastoiditis, for which cases of herpes zoster oticus are occasionally mistaken. Points of importance in the diagnosis are (1) the nature and distribution of the eruption; (2) the type of the deafness—namely, inner- and not middle-ear deafness; (3) loss of taste in the corresponding side of the tongue, owing to affection of the chorda tympani nerve; (4) absence of perforation of the tympanic membrane, although its appearance may be much altered by the eruption, and, in any case, an intact drum does not of course exclude disease of the *middle* ear.

The duration of the disease varies considerably. Some degree of neuralgic pain usually persists for two or three weeks. The facial paralysis may be evanescent, lasting only a few days, or it may disappear gradually during the course of some weeks. The same applies to the deafness and other symptoms of eighth nerve involvement. In rare cases some degree of facial palsy and nerve deafness is permanent.

Treatment consists of sedatives for the pain, the usual local applications for the herpetic eruption, and massage and electrical treatment for the paralysis if this persists.

## *Clinical Records.*

The following are brief notes of three cases which I have observed, the first two being characteristic examples of herpes zoster oticus, and the third a case of herpes facialis with eighth nerve symptoms.

CASE 1.—A man, aged 56, whom I saw at the request of Dr. John Hay, was in bed suffering from vertigo and vomiting, which began ten days before I saw him. For eight days there had been pain in and about the left ear and a vesicular eruption had developed on the pinna. Three or four days after the onset of the pain left facial palsy had appeared His temperature had varied between normal and 102°F. for the first three days of the illness. When I examined him he still complained of giddiness on attempting to walk, and some pain, though much less than a few days before. There was almost complete left facial paralysis, and the left concha showed an eruption consisting of crusts and drying vesicles and pustules. The meatal skin was somewhat swollen and presented the remains of a similar eruption, while the tympanic membrane was grey in colour and desquamating The hearing of the right ear was normal, that of the left very defective. In the left ear Rinné's test was positive and much shortened, the sound of a tuning fork on the vertex was referred to the good ear, and bone conduction was greatly diminished.

CASE 2.—A man of 28, sent to the Liverpool Royal Infirmary by Dr G S. Swan, of Rock Ferry For ten days he had suffered from right-sided facial palsy (complete at first but now diminishing), vertigo with a tendency to fall and walk to the left, and deafness of the right ear More recently he had noticed a moderate degree of pain about the ear, with tenderness and "sores" on the pinna. Examination showed incomplete right facial paralysis, a few small crusts, apparently the remains of herpetic vesicles, on the pinna, an opaque and slightly desquamating tympanic membrane, and almost complete loss of taste on the right side of the tongue. There was also marked nerve deafness of the right ear, a watch being heard on contact only, Rinné's test positive, and bone conduction for a C 128 fork 20 seconds below normal He still complained of some vertigo and showed a tendency to stagger towards the left on attempting to walk with eyes closed

CASE 3—A woman of 33 had suffered four weeks before I saw her from intense pain in the right side of her face. Three days later she had a sudden attack of vertigo and vomiting and became deaf in the right ear. On the following day a vesicular rash appeared on the right side of the forehead and chin and on the right cheek. The neck and pinna were unaffected and facial palsy was completely absent. On examination there was found marked nerve deafness of the right ear with great loss of bone conduction, much lowering of the upper tone limit, and relatively good hearing for low tones. No trace of eruption was to be seen either on the tympanic membrane, the meatal skin, or the auricle The vertigo, which had been sufficiently severe to confine the patient to bed for a fortnight, had, when I saw her, almost subsided, leaving only a sensation of unsteadiness. Six weeks later the hearing of the affected ear had undergone much improvement, but still remained somewhat below normal

As already mentioned, Cases 1 and 2 are fairly typical examples of herpes zoster oticus, and it is easy to understand that a case such as the first of these might, on a cursory examination, be mistaken for one of acute otitis media with labyrinth complications. An error of this kind is to be avoided by a careful consideration of all the facts, and by bearing in mind the occasional occurrence of Ramsay Hunt's syndrome.

The third case, although it was not one of herpetic inflammation of the geniculate ganglion, seemed to me worthy of record because it illustrates an allied condition which is referred to by Ramsay Hunt as herpes facialis with acoustic complications. In cases of this sort the principal seat of the herpetic inflammation is in the Gasserian ganglion, to whose zone the eruption is limited, while the absence of facial palsy and of eruption in the zoster zone of the geniculate ganglion suggests that the labyrinth symptoms (deafness and vertigo) are due to herpetic inflammation of the eighth nerve ganglia of Corti and Scarpa, which are to be regarded, like the geniculate, as true posterior root ganglia.

*References.*—On Herpetic Inflammation of the Geniculate Ganglion: A New Syndrome and its Complications, by J Ramsay Hunt, Journal of Nervous and Mental Diseases, February, 1907 A Further Contribution to the Herpetic Inflammations of the Geniculate Ganglion: A Syndrome Characterised by Herpes Zoster Oticus, Facialis, or Occipitalis, with Facial Palsy and Auditory Symptoms, by the same Author, American Journal of Medical Science, August, 1908.

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MANCHESTER HOSPITALS—At the annual meeting of the Manchester and Salford Hospital for Skin Diseases, held on March 17th, it was stated that the hospital did not receive adequate support from towns outside its own immediate area During the past year the number of patients from Manchester was only 40 per cent. of the total, and the number from Salford 15 per cent., the remaining 80 per cent. coming from outside towns. From Ashton-under-Lyne there came 783 patients, from Bolton 851, from Oldham 939, from Stretford 1074, and from Stockport 1265 Nearly all the private subscriptions, however, came from Manchester Patients came from 430 towns and villages, but the amount of private subscriptions that came from these towns and villages was very small.—A new nurses' home which has cost £15,354 was formally opened on March 17th in connexion with the Hope Hospital, Salford. At the hospital the accommodation of all kinds has been more than trebled. There are now 238 bedrooms instead of 72, and 25 public and private sitting rooms instead of 5 During the war the nursing staff was 78 in number; now it is 158. Up to 1920 the staff worked 70 and 80 hours a week. They now work an eight-hour day—Owing to the inadequacy of the premises of the Manchester Northern Hospital for Women and Children, a public meeting was held on March 10th in support of an appeal for £150,000 to build a new hospital. A site has been given by Sir Edward Holt in Cheetham Hill road. What it is proposed to erect is a building which will accommodate 200 beds and cots, for an out-patient department, and a nurses' home. Up to the present £31,020, which sum includes £10,280 from the general fund, has been subscribed

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF MEDICINE.

A meeting of this Section took place on March 23rd, Dr. Hugh Thursfield, the President of the Section, occupying the chair.

### Modern Methods of Controlling Infectious Disease.

Sir John Robertson (Birmingham) read a paper on this subject, which was supplemented by charts and diagrams. His purpose, he said, was to deal with certain general principles, leaving matters of detail aside. Some of the newer methods for controlling these diseases had been but little tried, and hence were not yet ripe for general discussion. No two infectious diseases could be successfully dealt with, from the preventive standpoint, by identical methods, but there was a tendency towards a different belief. The better the knowledge of the natural history of a disease the more efficient was its control likely to be. And the present higher standard of intelligence in the general community on these subjects was a favourable factor in keeping down infectious disease. The mortality from various infectious diseases in this country had shown an enormous decline; the small-pox mortality had practically vanished, enteric fever in most districts was practically unknown, so that it was difficult to get a case of it to demonstrate to students, while the mortality of scarlet fever was now a vanishing quantity. In regard to the incidence of the last named, however, there appeared to be very little reduction, though there were a number of factors which militated against correct incidence figures being obtained. The diphtheria mortality curve had gone down very much indeed. Measles showed a fairly high mortality in the first 25 years of the half century, but since then the mortality had gone down. Whooping-cough had not had special means of control applied to it, yet the mortality had gone down in a wonderful way. Also the death-rate of the composite condition classed as bronchitis had largely declined. Pneumonia, on the other hand, showed little reduction in mortality. The acute condition influenza did not seem to have been checked by any control measures. As to possible causes for the improved returns in most of the diseases, he did not doubt that the type of disease was now milder, and because of that all the cases might not have been diagnosed. The rate of infection among young children could not now be so great as formerly because the proportion of young children in any British population was now less than 50 years ago. Of every 1000 population in 1871, 361 were children under 15 years of age, whereas in 1921 there were only 277 children under 15, a difference of 84 per 1000.

In the past, four methods had been applied in the attempts to control infectious diseases—notification, isolation, quarantine, and disinfection. Within recent years to these had been added immunology. Each disease responded in a different way. The best results ever obtained in the prevention of any infectious disease were those which followed the active immunity caused by vaccination against small-pox. But when only 30 per cent. of the population were vaccinated and a number were but imperfectly protected by vaccination it was necessary to bring into operation isolation and quarantine. These were very satisfactory if carried out with intelligence and vigour. The difficulty at present was that a number of cases of small-pox were so mild that they escaped notification. There appeared to be very little immunity in small-pox—i.e., few unprotected people escaped the disease when exposed to the infection. The virus of small-pox was easily killed by exposure to light and air, but was capable of remaining virulent a long time when shut into an enclosed space. In this connexion he related the [illegible] which a book belonging to a small-pox patient (who died) was handed round to relatives 13 months later, and the disease then broke out in three separate houses into which the book was taken. Scarlet fever was in a different category in regard to immunity, for natural immunity played a definite part in limiting the number of cases, and Sir John Robertson considered it also had much to do with reducing its virulence. If perfect bed isolation could be ensured he thought scarlet fever could be treated in the wards of a general hospital without fear of infecting other patients. The "Dick" positives numbered 70 per cent. in young children, and the proportion gradually fell with advancing years, until at 20 years it was only 11 per cent. Among adults who had had the disease earlier in life only 3·9 per cent. were Dick-positive. With regard to the active immunisation of people against scarlet fever, experience was not yet sufficient to warrant its general use as a preventive measure. Much good work was, however, being done in this direction, and he did not doubt it would be possible for any medical practitioner at a future date to protect any individual against an attack of scarlet fever. Isolation had not limited the spread of the disease; indeed, as a means of control, isolation was of little value to the community. Still, it was a great convenience and of value to the public. The disadvantage was that, unless the discipline in the fever hospital was really good, the patients were apt to contract from other patients infections other than their own. The proportion of immune persons was largest where the population was densest, and the explanation was considered to be that they were gradually immunised by the widespread infection. Certainly spread of the disease was most rapid in sparsely populated areas. It was not yet sufficiently realised that nose, throat and ear secretions were a potent source of infection. In Birmingham the mortality from scarlet fever was now 1·09 per cent. At present reliance was placed on the old methods of isolation and disinfection, but there was reason to hope that the work now being done on the subject would produce a satisfactory method of limiting, by immunisation, the incidence of this disease.

In regard to diphtheria, hospital disinfection and isolation had apparently accomplished nothing in reducing the incidence rate, but in Britain the mortality had been greatly reduced; 30 years ago it was 30 per cent. in Birmingham, now the figure was about 5 per cent. The most severe cases of diphtheria should be removed to hospital for skilled medical supervision and nursing, though not with the expectation of preventing the spread of the disease. This spread was brought about by carriers, who could be divided into virulent and non-virulent. The virulent were further divisible into those who were carriers for a short time and those who could be regarded as chronic carriers, many of whom had diseased tonsils, often in association with adenoids. The laryngologist's aid should be sought for these. Some people seemed to have a natural immunity against diphtheria. New York statistics gave 93 per cent. of positive Schick reactions among infants under 1 year, and here again, as in scarlet fever, there was a progressive diminution in the proportion of positives as age advanced. Active immunisation of young children would probably reduce the incidence of diphtheria practically to nil. The immunisation of 38,000 in America reduced the deaths from 1500 per annum to 663. The use of a toxoid plus antitoxin would protect a child, certainly past its period of greatest danger. It was now a safe method, and it reduced the risk of infection by about 70 to 90 per cent. The difficulty associated with the use of the immunisation method in this country was the rooted objection of the people to inoculations of any kind.

Tuberculosis showed a great reduction in mortality, and in the areas where propaganda work was active the incidence rate of the disease had fallen wonderfully. In Birmingham it was now half what it was 10 or 15 years ago. Concerning measles, little had been done in the way of preventing outbreaks of this disease from spreading. In Paris a system of immunising children in public dispensaries had given, according to the claims of the staff, very fine results. Isolation had probably been of some help in the enteric group of diseases, but he attributed the diminution mainly to mass sanitary measures, such as the provision of uncontaminated water, the removal and destruction of refuse heaps, &c. He raised the question whether a general cause was not at work, such as a gradual immunisation of the people, to account for the milder type of diseases, the lowered mortality, and, in many instances, the lessened incidence rate. Disinfection of rooms inhabited by patients by burning sulphur or by liberating chlorine gas was no longer necessary; if everything used and the room were thoroughly cleansed nothing further seemed to be called for.

### *Discussion.*

Dr. C. R. **BOX** agreed that there were no stereotyped methods applicable to the prevention of all infectious diseases. It was only by increasing knowledge of the nature and cause of disease and the manner of its spread, as well as of the problems of bodily defence, that success in this campaign could be hoped for. This success would be greatly helped by the spread of knowledge among the general public, and it would materially lessen their objection to inoculations. He suggested that immunity was set up by a heavy dose of infection calling forth the defensive mechanism of the body. He considered that the scarlatinal carrier was a very important person. Sir John Broadbent had recorded the case of a boy who had no symptoms, but who left scarlet fever in his wake wherever he went. The infection in this disease, he agreed, was spread by discharges from the ear, nose and throat.

Dr. E. W. **GOODALL** said that to talk of controlling infectious disease was to speak loosely. One did not control the disease; what were controlled were the actions and the circumstances surrounding the sufferer from the disease. Efforts, proved to be futile, had been directed against the micro-organism, to the neglect of other methods, for there was a tendency to consider not only that the microbe was the cause of the disease, but that it was the disease itself. Only in the case of diphtheria had the mortality been diminished by therapeutic measures. In regard to the death-rate from pneumonia and influenza there was little cause for satisfaction. The decrease in the scarlet fever mortality he attributed to a lessened virulence. He pleaded for a continuous close study of the natural history of these diseases as affording the most hope for improvement, as bacteriology had not been of so much help as was expected. Of all the measures adopted he thought the most important was that of rendering ourselves immune from attack. In the case of measles, this had not been done in England by obtaining blood serum from the measles patient, and it might prove a somewhat formidable proposition, seeing that it required the serum of about 300 children to immunise 2000 to 3000 children. Vaccination against small-pox was largely falling into abeyance, and the hopes in regard to protection by immunisation on a large scale were not at all bright. The toxin-antitoxin method, applied on a small scale, had been shown to be of great value.

Dr. R. A. **O'BRIEN** directed attention briefly to a discussion of controlled and uncontrolled immunisation in diphtheria. He said that he and his colleagues had had under observation, in four years, three residential institutions in which a good deal of diphtheria had occurred. All the children were tested and immunised, and kept immunised, and during those four years there had been no case of clinical diphtheria among them, though they were exposed to the risks of infection. In one school there was a large outbreak of the disease, a case of uncontrolled incidence. This was followed by a period of immunity, and it had been found that the importation of fresh residents was a menace unless they were subjected to the same process. He considered that efforts should be made to immunise the nursing and other staffs of the fever hospitals of the country, as the dislocation of duties through illness was a serious matter, besides being a source of economic loss.

Major G. S. **PARKINSON**, R.A.M.C., spoke of the experiences in relation to infectious disease during the war, and the effective way in which typhoid was checked by inoculations. At one period in the early stages of the war the supply of antitetanic serum gave out, and the incidence rate of that disease at once rose, to be as quickly brought down when a fresh supply arrived. During a campaign the men were under strict control, hence results could be very definitely ascertained, whereas in civil life public opinion was often an obstacle to efficient control and treatment. Gibraltar afforded a good example of control. Everyone there was vaccinated against small-pox, and no case of that disease occurred there, though it was prevalent in Spain and Morocco, countries with which Gibraltar was in constant communication.

The **PRESIDENT** thought the idea of a general pool of acquired immunity was a possible explanation of the fall in the death-rate, and to a large extent of the incidence rate, too, of many infectious diseases, in which influenza did not share. A further point concerned the fall in the incidence and the death-rate from the conditions classed by the Registrar-General as bronchitis. This was largely due to better general social conditions, and especially to regulations applied to factories by the Home Office. As an instance he could recall large numbers of cases of bronchitis coming to St. Bartholomew's Hospital from the brass-works of Clerkenwell, but since the Home Office Regulations had been in force the number of these had been very much less.

## SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

AT a meeting of this Section held on March 26th, Dr. E. W. **GOODALL** in the chair, Prof. W. J. **WILSON** read a paper on

### *Typhoid Fever in Northern Ireland.*

He began by calling attention to the great reduction of mortality from typhoid fever which had taken place, not only in the United Kingdom but in most European countries. In 1875 the rate of mortality from typhoid fever in Ireland was lower than in England and Wales; it was 1·6 per 10,000 as compared with 3·7. Between 1875 and 1886 the rate declined in England and Wales but was almost stationary in Ireland; the rates in 1886 were 1·8 in England and 1·6 in Ireland. Little change occurred in the next ten years, but since 1900 there had been a considerable decline, greater in England than in Ireland; in 1924 the rates were 0·13 for England and Wales and 0·31 for Ireland. Prof. Wilson pointed out that in Ireland the rural population was relatively much more numerous than in England and that the development of the creamery system, together with imperfect public health control, had been responsible for several outbreaks in rural areas. Passing to the special problems of Belfast, he presented statistics showing the great decline of typhoid fever in that city. The mortality-rate was 7·0 per 10,000 in 1872–75 and as high as 9·7 in 1896–1900. Since 1910 it had never reached 1·0 and in 1924 it was only 0·07. He referred to the late Dr. L. W. Darra Mair's report incriminating shell-fish, and, while expressing his admiration of that report and his belief that much typhoid in Belfast had been due to the consumption of contaminated cockles and mus[illegible] did not think that the great decrease of recent [illegible] could be attributed wholly to a change of habit in [illegible] use of shell-fish. He attached much importan[illegible] the abolition of privies, the substitution of [illegible] ashpits, improved scavenging, abatement of [illegible] decrease of stables and byres with their [illegible] flies, more effective sanitary admini[illegible] standard of living and education, and [illegible] a sanitary conscience. The work of [illegible] Taylor on the effect of the addi[illegible] [illegible] to an infected populat[illegible] a [illegible] in the Belfast ex[illegible] mortality had been during the [illegible] expansion, when the increase of population was due not merely to excess of births over deaths but also to immigration. Prof. Wilson concluded his paper with an account of a series of outbreaks which had been fully studied.

His paper was discussed by Sir William Hamer, Sir George Buchanan, Dr. Major Greenwood, Dr. S. Monckton Copeman, Dr. G. C. Trotter, Dr. J. A. Arkwright, Fleet-Surgeon W. E. Home, and Dr. Goodall.

## LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

A meeting was held on March 9th, Dr. Christine Murrell, the President, being in the chair, when Miss Gertrude Herzfeld gave an address on the

### *Acute Abdomen in Childhood.*

She spoke first of the differences between the pathology of this condition in adults and in children. In children the lesions were limited to the embryological mid-gut, corresponding to the small intestine and the first two-thirds of the large intestine. As to the manifestations of inflammatory or obstructive conditions, these were much more speedily noticeable in children. Inflammation proceeded to suppuration much more rapidly and obstruction soon gave rise to symptoms of toxæmia. For these reasons the practitioner should not wait to make a differential diagnosis once he was convinced of the presence of an acute condition in the abdomen, but should at once call in surgical aid. Prior to laparotomy the child should be kept warm and given plenty of fluid; subcutaneous saline injections should be administered if there had been much vomiting. It was the speaker's custom to give atropine in large doses, gr. 1/200 to 1/150, to infants under 2 before operation, and gr. 1/100 to children over 2. Warmth in the theatre, speed in operating, and gentle handling were essential to success. Only two incisions were used by her—the gridiron incision, where appendicitis or an intussusception proximal to the transverse colon was suspected, otherwise a vertical paramedian incision. Post-operative saline infusions were always given.

The conditions giving rise to an acute abdomen in childhood could be divided into inflammations and obstructions. Among the former, appendicitis (50 per cent. of all abdominal cases), pneumococcal peritonitis, streptococcal peritonitis, Meckel's diverticulitis, and tuberculous abdomen had to be considered. Congenital obstructions to be looked for included imperforate anus, congenital hypertrophy of pylorus, maldevelopment of gut, bands, and Meckel's diverticulum. Acquired obstructions might be due to intussusception (20 per cent. of abdominal cases in childhood), tuberculous peritonitis, hernia, or volvulus. She discussed in some detail acute appendicitis and intussusception as being relatively common conditions, and gave an account of recent investigations into the rare condition of pneumococcal peritonitis.

*Acute appendicitis* could occur at any age, but generally the patient was over 2 years. It was rarely diagnosed before suppuration supervened; over 90 per cent. of Miss Herzfeld's cases were already suppurating at operation. She had found pus as early as within 12 hours of the first attack. Vomiting was almost invariable except where the appendix was in the pelvis, in which case pain might be localised at the umbilicus in the young child, or in the suprapubic region in the older one. There might be frequent and painful micturition through involvement of the bladder, or diarrhœa. There was little rigidity of the abdominal wall, but on rectal examination tenderness was found not only during insertion of the finger, which was usual in normal children, but on movement of the finger-tip in certain directions. The feature of [illegible] of a retrocæcal appendix was a lack of [illegible] the abdomen associated with posterior [illegible] of the lumbar muscles; vomiting might occur. If the appendix was associated with an undescended cæcum the rigidity and tenderness were to be found higher up in the abdomen.

The differential diagnosis of appendicitis from diaphragmatic pleurisy and pleuro-pneumonia could be very difficult. In the last-named condition the rigidity and tenderness were not so well marked nor so persistent as in appendicitis. Sometimes re-examination some 20 minutes after the first examination revealed a shifting of the signs to another place. The general appearance of a child with pneumonia was characteristic. Acute and subacute pyelitis could be differentiated from appendicitis by a microscopic examination of the urine, which was usually acid, and by the presence of lumbar tenderness. In ileo-cæcal tuberculosis abdominal tenderness was very marked, but rigidity less so, and the child, on the whole, was not so ill. This condition might be very difficult to differentiate from appendicitis and in doubtful cases it was better to explore. The possibility of cyclic vomiting must be borne in mind and excluded, since an anæsthetic was injurious in this condition. The history of vomiting previous to the attack and the presence of acetonuria were diagnostic features.

*Pneumococcal peritonitis* was a rare condition, but the mortality was high (70 to 75 per cent.) irrespective of treatment; it could be primary (so-called idiopathic) or secondary to pneumonia or some other lesion. The primary form was of especial interest, as its pathology had only been worked out by Prof. J. Fraser and Dr. J. E. Macartney of recent years in Edinburgh. It occurred only in little girls of the hospital class, the average age being 5½. It began as a pelvic peritonitis and was an ascending infection, through the vagina, in children who had a vaginal discharge. The class incidence might be accounted for by the inadequate clothing and the habit, among the poorer children, of sitting on dirty steps. A septicæmia rapidly followed the peritonitis, with a positive blood culture in 6 to 12 hours. Experimental work on rabbits had enabled the course of infection to be traced and had proved that the blood infection was a secondary one. The child suddenly complained of acute abdominal pain, followed by vomiting, delirium, and high temperature. In the less acute cases the septicæmia might be delayed for 48 hours. The only possible treatment was drainage of the lower abdomen. Blood transfusion had not proved of much avail.

*Intussusception.*—The typical features were onset of acute abdominal pain in a fat, strong, healthy baby, usually a boy, over 4 months of age. The usual history was that the child screamed and drew up his legs, then "fainted away," and, exhausted, fell asleep, only to awake half an hour later with another attack; vomiting would begin at this stage, and sooner or later blood would be passed per rectum. Since the contents of the bowel distal to the ileo-cæcal region had first to be emptied, blood was not necessarily passed at once. Miss Herzfeld quoted cases to show the difficulty of diagnosis even when blood was passed. It was unwise to operate unless the tumours could actually be felt under anæsthesia. If the patient was under a year old reduction alone should be performed at operation, for any mutilation at the time was not well borne by the infant.

Dr. Hazel Gregory pointed out that in children rigors, if present, were pathognomonic of acute *B. coli* pyelitis.

Miss L. Martindale described a fatal case of pneumococcal peritonitis in a child of 5. The child was not of the hospital class, but had previously been brought for advice for vaginal discharge and masturbation.

## LONDON CLINICAL SOCIETY.

This Society held a clinical evening at the London Temperance Hospital on March 18th, Mr. Herbert J. Paterson, the President, in the chair.

The President showed a man who is undergoing a series of plastic operations to replace a nose destroyed by lupus. He also showed a series of radiograms illustrating an unusual site for gastric ulcer, where the clinical diagnosis was only confirmed by taking lateral views after antero-posterior exposures had proved negative.

Dr. FLEETWOOD WALKER showed a man who two days before, on the advice of a friend, had taken a teaspoonful (repeated four hours later) of the following mixture to cure a cough: 1 eggcupful of resin powdered, 1 eggcupful of honey, 2 tablespoonfuls of vinegar. On taking the second dose he came out in a generalised punctate scarlatiniform rash which still persisted. On the following morning his face was puffed. The urine showed the presence of resinous bodies when treated with nitric acid.

Mr. H. P. WINSBURY WHITE showed: (1) A colour drawing of malignant disease of the kidney. (2) A specimen of kidney with large stone (with X ray photographs by Mr. J. C. Macduff). The chief interest in the case was that the patient had for several years had renal symptoms on the opposite side, which had helped to mask the diagnosis. (3) Specimens of large stones removed from the bladder of a woman, aged 32, who had had two Cæsarean sections. The patient had also passed ligatures per urethram. During the discussion Mr. White said that he would give no expression of opinion as to whether catgut ligatures should be used in Cæsarean sections, although aware that over 90 per cent. of cases of ruptured uterus occurred in cases in which catgut had been used.

Dr. HAROLD SANGUINETTI showed: (1) A specimen of a strangulated inguinal hernia from an infant aged 4 months. The child was admitted to hospital as a case of broncho-pneumonia and died after a few hours. The condition was only found on post-mortem examination. (2) A specimen of stenosis of the duodenum in an infant. The child was admitted to hospital because the mother said it was not passing any urine. The condition was discovered post mortem. (3) A specimen of kidneys, ureters, and bladder in a case of bilateral renal calculi in a woman who developed bacilluria after an operation for carcinoma of the breast.

Dr. PHILIP FIGDOR showed a single woman, aged 28, who had complained of stiffness and pain in the left knee, which had commenced one month after she knocked her knee against an iron bar in October last. The knee was swollen, the synovial fluid was increased, and all movements were painful. She gave a history of night sweats for the past four months and also a strong tuberculous family history. The X rays showed some indefinite patellar changes. The intradermal tuberculin test was strongly positive, while the Wassermann was also strongly positive. The case was probably one of syphilitic arthritis. She was having auto-syphilitic treatment as well as ionisation locally.

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## MANCHESTER MEDICAL SOCIETY AND LIVERPOOL MEDICAL INSTITUTION.

AT a joint meeting of the Manchester Medical Society and Liverpool Medical Institution held at Manchester on March 3rd, Prof. A. H. BURGESS, the President of the Manchester Medical Society, took the chair, and Mr. R. C. DUN (Liverpool) read a paper on

### *Chronic Intussusception.*

This condition, he said, was much less common than acute intussusception; it occurred in older children, and there was a larger proportion of the enteric and colic forms; the sexes were equally affected. The symptoms were slight, indefinite, intermittent, and prolonged. In his 13 cases they had been present for periods ranging from four weeks up to two and a half years. Umbilical pain was usually slight and collicky; vomiting was occasional and concurrent with the attacks of pain; constipation was not marked, and there was always a deterioration in health. An abdominal tumour was felt in 9 out of the 13 cases; it was intermittently present, appearing and disappearing with the pain, and in two cases only was it long enough to be called sausage-shaped. Blood and mucus in the stools was only noticed in two of the cases, and in both of these it was intermittent. Diagnosis was difficult owing to the evanescence of the abdominal tumour, and it was important to make frequent examinations, especially during the attacks of pain, so as not to miss this sign. In no case had the intussusception progressed far enough to cause acute intestinal obstruction.

The treatment, said Mr. Dun, had been laparotomy and reduction in all cases. This had always been easy; no adhesions had ever been found, and there had been practically no œdema. In none of his 13 cases did the symptoms recur after operation. No obvious pathological condition had been met with in any of the cases which could account for the intussusception.

### *Cysts of the Semilunar Cartilage.*

Mr. T. P. MCMURRAY (Liverpool) reported eight cases. Unlike those previously reported, three of them were in connexion with the internal semilunar cartilage; the 18 cases previously reported had all been associated with the external cartilage. The cysts were multilocular, contained clear fluid, and required excision for the cure of the symptoms. Two of them had already been operated on by other surgeons, when the cysts alone had been removed with no relief of the symptoms. In all the eight cases the affected cartilage was removed with the cyst and a complete cure resulted. Microscopical examination of the cyst wall showed that it was lined with compressed cartilage cells and intercellular strands with darkly staining nuclei, but no trace of endothelium or epithelium. Blood-vessels were seen on the outside of the cysts, but not to the same extent as between the cysts. From the presence and from the position of the blood-vessels connected with the cysts, it was concluded that the cysts were traumatic in origin, and of the nature of degenerate change.

### *The Purgative Action of Magnesium Salts.*

Dr. HENRY COHEN (Liverpool), who read a paper on this subject, pointed out that there were two main theories about the mode of action of the saline purgatives. The first was that their action is entirely local—*i.e.*, exerted solely from the lumen of the intestine. The second was, on the contrary, that the saline purgatives do not act from the lumen of the gut, but only after the absorption of the cathartic ion. The evidence adduced in favour of one or other theory had, up to the present, been too conflicting to justify definite conclusions. Using a special method for the estimation of magnesium in small quantities of serum, Dr. Cohen found that the oral administration of purgative doses of $MgSO_4$ (20–30 g.) was—within the limits of experimental error—unaccompanied by any alteration in the magnesium content of the serum. On the other hand, intramuscular injection of magnesium sulphate in solution (18–20 c.cm. of 10 per cent. aqueous solution) was followed by considerable increase (50–100 per cent.) in the magnesium content of the serum; but in no case was this rise accompanied by the characteristic purgative effect of the salt when given by the mouth. Following a purgative dose of $MgCl_2$ there was a rise in the magnesium content of the serum. This rise was, however, no higher and no less rapid than that following intramuscular injection of $MgSO_4$. Since the latter did not cause purgation, it followed that the purgative action of magnesium salts was exerted independently of the absorption of magnesium into the blood. Dr. Cohen exhibited radiograms showing that, in the same individual, a purgative dose of magnesium sulphate increased the rate of passage of an opaque meal along the intestine and also the bulk of the intestinal contents. Moreover, when the lower bowel was empty before the experiment, the first stool passed after administration of the purgative salt contained bismuth. Dr. Cohen concluded from the two sets of data he had presented that the purgative action of magnesium salts is entirely local and is independent of the absorption of magnesium into the blood stream.

## LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution on March 18th Mr. G. C. E. SIMPSON read a paper on

### *Acute Appendicitis.*

From the Registrar-General's reports, checked by his knowledge of a small town where he could trace most of the cases of acute appendicitis in the last five years, he had come to the conclusion that the incidence of the disease was about 1 case per 1000 of population per annum, with a mortality in cases treated surgically of about 6 per cent. Cases treated throughout on medical lines (Osler's Medicine, 1901) had a mortality of 14 per cent. He suggested that this would be reduced to less than half if the general peritonitis and abscess cases were submitted to immediate operation and the rest treated on medical lines. The present mortality of the surgical treatment was too high, and the careful choice of the time of operation in later cases would give a reduction, apart from the reduction to be effected by earlier diagnosis. Mr. Simpson quoted from recent writings of Sherren and Adams in favour of delay, and of Burgess and Grey Turner in favour of immediate operation. He professed himself a follower of the St. Thomas's School. Operating at once on all cases seen in the first two days, on cases seen later which were advancing, and as a rule in all children, he used the Ochsner method in doubtful or subsiding cases seen on the third day or later, and operated when they had subsided; these cases, however, must be kept under close observation, and interference undertaken at once if signs of progression were seen.

On these lines Mr. Simpson's mortality in the Northern Hospital in the last five years was only 2·5 per cent. Adding the figures from the cottage hospital in the small town referred to, it was 3·5 per cent. (and in that town the main mortality was in the first year). In the 15 per cent. of his cases in which delay was practised (45 in all) only six failed to settle. (In five abscess required opening, and in one gangrene caused the advance.) And at the subsequent operation no drain was used in 33, although in several there were signs of gangrene, perforation, or abscess, and, in a few, fistula into the intestine. No case died, but in one of the cases of acute abscess a fistula required treatment. Four other cases operated on by Mr. Simpson had fistulæ, and in all of them tubercle was present. Mesenteric or peritoneal tubercle was marked in 5 per cent. of the cases and caseating glands were removed in a number. One case with tuberculous appendicitis and glands died of tuberculous pneumonia.

Mr. Simpson concluded that the mortality of acute appendicitis could be lowered by judicious choice of the time to operate in cases not seen before the third day, but emphasised the need for the cases to be under strict observation and regulation. He considered that this would lead to all suspect cases of appendicitis being kept in the Fowler position and on water only while waiting the advent of the surgeon, and that this, and the opportunities given to students to see more of the symptoms of appendicitis through these cases being detained in the wards, would more than neutralise the ill-effects anticipated by Burgess and Grey Turner from some doctors carrying out the treatment in the wrong cases and under wrong conditions.

Dr. C. RUNDLE read a paper on the use of indicator reactions in diphtheria and scarlet fever.

*Corrigendum.*—In the agenda and report of the discussion on cancer held by the Society of Medical Officers of Health on [illegible] Dr. W. D. Newcomb, pathologist to St. Mary's [illegible] described as assistant pathologist.

# Reviews and Notices of Books.

### TUBERCULOUS DISEASE OF THE HIP-JOINT.

Diagnosis, Treatment, and End-Results. By GEORGE PERKINS, M.Ch. Oxon., F.R.C.S. Eng., Assistant Surgeon to the Royal National Orthopædic Hospital; Orthopædic Registrar, St. Thomas's Hospital. London: Humphrey Milford, Oxford University Press. 1926. Pp. 118. 6s.

IN 1924 the British Orthopædic Association founded the Robert Jones prize and medal, the subject chosen for the first competitive essay being the Diagnosis, Treatment, and End-results of Tuberculous Disease of the Hip-joint. The successful monograph, by Mr. George Perkins, is now published under the auspices of the Association, and it may therefore be regarded as expressing, perhaps more accurately than any work yet issued, the trend of British surgery in regard to this often seriously crippling disease.

Early diagnosis, as might be expected, is dealt with in considerable detail, and the importance of a limp as the primary symptom is very properly emphasised. Stress is laid on the facts that pain is not usually present at the onset of the disease, and that a skiagram taken soon after the commencement of symptoms shows nothing abnormal. The section on treatment recommends recumbency with traction and immobility throughout the active stage. In the author's practice these are secured by the use of the Pyrford hip frame, a combination of the Jones's abduction and the Carshalton frames, mounted on the Carshalton carriage described in THE LANCET, 1921, i., 1071, by Dr. Gordon Pugh. All cases are fixed in full extension, the widest possible abduction, and negative rotation, on the assumption that if ankylosis occurs it will be fibrous, and that the hip will slowly tend to adduct and flex. An abscess is not interfered with unless threatening to break through the skin or causing pain; the contents are then expressed through an incision which is at once closed. In the author's opinion there is no sure sign as to the exact date when activity ceases; X rays cannot show whether the disease is still active, and clinical experience alone can guide. In the convalescent stage the aim of treatment depends on the degree of destruction. When the cartilage covering the head of the femur is intact, or when it is only in part destroyed and efficient traction has held the femur away from the acetabulum so that the intervening fibrous tissue is of sufficient length to allow movement, the treatment recommended is by patten and crutches or weight-relieving calliper. When the cartilaginous surfaces have been more seriously damaged and the bones allowed to come into apposition through inefficient traction, ankylosis has to be aimed at, the patient being allowed to walk on the affected leg for a year or two in a plaster-of-Paris spica ending above the knee.

The third section of the book, which deals with the results of treatment, is of special interest, differentiating between the end-results that may be expected in disease of the acetabulum, the femoral neck, the synovial membrane, and the head of the femur. Dislocation and subluxation, or wandering acetabulum, are declared to be avoidable and due to faulty treatment; they are serious inasmuch as they always result in an unsound hip and demand further treatment to improve the function of the limb. In the last chapter the question of primary and secondary operations is discussed and a detailed description of the Pyrford frame given.

This little volume is attractive and unusually helpful, and expresses clearly and modestly the opinions the writer has formed after careful study and discriminating observation. It is well printed and illustrated by excellent skiagrams.

### ANATOMY

*Grundriss der Wissenschaftlichen Anatomie* By Dr WILHELM LUBOSCH, Professor der Anatomie in Würzburg Leipzig: Georg Thieme. 1925 Pp 202

WE have gone through this book with great pleasure It is not a text-book of anatomy in the sense usually understood by the student, and it is more than a handbook of morphology applied to the human body It is intended to be a companion volume to the reader's anatomical text-books, to be used with them so that the student may obtain a more comprehensive view of the science which includes within itself the details of the body on which he is working It deals with anatomy in its relation to philosophy, medicine, physiology, and so on, proceeds to consider life and its necessities in organic structure, and thus opens the way to the special morphology of the human subject through general morphology with its many points of view It is possible that the English student would not take kindly to disquisitions on metaphysical matters, but we would like to see such a book in his hands, not because of its new material, nor because the views are always those taught here, but because of the excellent way in which the information is put together The facts are certainly to be found in works in our tongue, but in this work they are placed in proper sequence and the subject is treated as a whole in clear language, and often with commendable brevity Developmental anatomy, moreover, is properly placed in the morphological scheme, although we would have liked to have seen more made of this subject in dealing with the special morphology of the human frame A morphological consideration of the cellular constituents brings to an end a book on which Prof Lubosch is to be congratulated.

### THE SYMPTOMS OF DISEASE

*The Basis of Vital Activity* By Sir JAMES MACKENZIE. London: Faber and Gwyer 1926 Pp 132 6s

THROUGHOUT his pilgrimage from Burnley through London to St. Andrews, Mackenzie was at bottom concerned with one topic—the nature of symptoms As it happened, after some concern with visceral pain, the symptoms of cardiac disease became for many years his preoccupation, and it was the success with which he followed this particular line that brought him to the great position which he deservedly held throughout the medical world. There are many workers who have followed his lead and elaborated his analysis of cardiac symptoms, they have proved beyond doubt that his methods and results in this field are sound and fruitful And in this short statement of his general position, finished very shortly before his death, he sets out to persuade his fellows that similar methods can be applied to symptoms of any kind and that they will yield equally important results if they are pursued sincerely and with patience commensurate with the difficulty of the problem His testament needs close reading and indeed, it must be confessed that his meaning is not always quite clear Symptoms are not, he says the direct result of injuries inflicted on the body; they are produced by the body and are the manifestation of abnormal or unusual activity by some organ or tissue Cells are always either discharging energy or renewing their supply of it; their periods of renewal can be varied considerably and this is the way in which their activities are modified When they are active they exhibit their specific activity and at the same time discharge an impulse which influences other cells and produces the regulation and coördination which is characteristic of the cells of an organ and of the organs of the body Hence permeating all bodily activities is the reflex arc —not, perhaps, a very happy form of words for it gives a wide meaning to an expression which has customarily had a more limited significance The implications of these propositions must be followed in the original and in the experience of the reader, if he concludes that they are ill founded, he will find on the last page that the author admits that that is quite likely But it will do everyone good to reflect as seriously as they can on the definition of a disease as 'the reaction of the body to an injurious agent'

### NOTABLE BRITISH TRIALS

*Trial of Abraham Thornton* Edited by Sir JOHN HALL, Bt. London and Edinburgh Wm Hodge and Co 1926 Pp 183 10s 6d

THE latest volume in the series of Notable British Trials (Rex v Abraham Thornton) lacks the direct medico legal interest of its predecessor, the trial of Ronald True But it has all the human appeal of an unsolved problem and a queer historical interest as well. In 1817, on the morning of Whit-Tuesday, the body of a girl named Mary Ashford was found in a pond near Sutton Coldfield. There was strong suspicion that Thornton had been guilty both of criminal assault and of murder He had been with her at a village dance the previous evening and (as he himself admitted) was alone with her afterwards till 4 A.M, a few hours before her body was recovered from the pond. Footprints corresponding with Thornton's shoes were found hard by, and things looked black for him. He was found guilty of wilful murder by the coroner's jury, but, to the surprise of the countryside, was acquitted at Warwick assizes Then popular feeling running strongly against him, the archaic process of "appeal of murder" (already obsolete for 100 years or more) was invoked against him Under an Act of 1486 the elder brother of the dead girl succeeded in placing him on trial afresh in Westminster Hall. But one archaism was met with another Thornton claimed the primitive right of 'trial by battel' and flung down his gage, which his prosecutor showed no wish to take up Thornton was released a second time, but found his old home too hot for him and ended his life in America This was the last example of an appeal of murder and a challenge of trial by battle for Parliament put an end to these absurd anachronisms in 1819

The main medical interest of the case is the problem whether the modern expert witness would have been able to remove the doubts as to how Mary Ashford met her death A Birmingham surgeon made a post-mortem examination, but his evidence seems strangely brief to-day Sir John Hall, who edits the trial with skill, says there cannot be a shadow of a doubt that Thornton was innocent It would, perhaps, be safer to say that there was at any rate insufficient evidence to the contrary

### CLINICAL DISORDERS OF THE HEART-BEAT

Sixth edition By Sir THOMAS LEWIS M D, F.R.S, D.Sc, F R.C.P, C B.E London Shaw and Sons, Ltd 1925 Pp 191 8s 6d

IN this book Sir Thomas Lewis gives a clear and concise account of the various disturbances of the cardiac mechanism of the manner in which these disturbances can be recognised without instrumental aid, of their prognostic significance, and of their therapeutic indications. As he points out in the preface, it is the duty of investigators to bring to the notice of those who are in a position to apply them the practical results of recent advances in knowledge, freed as far as possible from technicalities The present volume admirably fulfils this object The records used to illustrate the various conditions are confined to sphygmographic and polygraphic tracings The sixth edition follows closely the lines of its predecessor, and the principal innovations it contains are in the department of treatment In 1920, when the fifth edition was published, quinidine was a novelty in cardiac therapeutics Since then it has been extensively employed in auricular fibrillation and in certain other disorders such as flutter, paroxysmal tachycardia, and extra-systoles In the present edition it is included in the therapeutic measures available for the treatment of these conditions. Reference is also made to the massive dose method of digitalis administration in heart failure with auricular fibrillation, and to the use of adrenalin in the Stokes-Adams syndrome. A new diagram is introduced which serves to bring the mechanism of auricular fibrillation more closely into line with that of flutter.

As a straightforward, up-to-date, and thoroughly practical exposition of an important aspect of cardiology this small book well deserves the universal popularity which it has earned with both practitioners and students.

NUTRITION.

*Lexicon der Ernährungskunde.* By Dr. E. MAYERHOFER and Dr. C. PIRQUET. Lief. 3 and 4. Vienna: Julius Springer. 1926. Pp. 337–592. G.M.12.50 and 12.

WE have received the third and fourth instalments of this enterprising work, of which the first two sections received notice in THE LANCET of Sept. 19th, 1925. The scope of the lexicon, as was then indicated, includes all subjects which are in any way connected with nutrition, human or animal. Among the longer articles contained in these two instalments are some of historical interest—e..g, on cannibalism and on the nutrition of primitive races. There are also many which bear directly on present-day questions, such as the relation of sex and nutrition, and army commissariat. The greater part of the work, as before, consists of short articles descriptive of foodstuffs and their raw materials.

## JOURNALS.

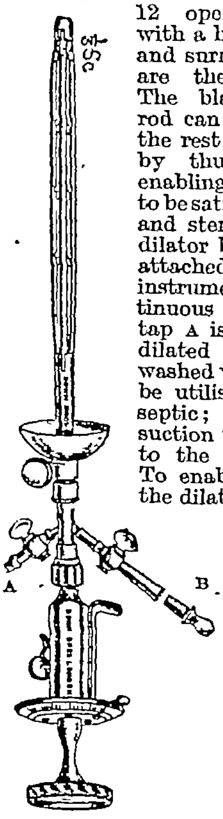
JOURNAL OF THE ROYAL ARMY MEDICAL CORPS, February, 1926.—The laboratory investigation of dysenteries and the identification of the bacillus, if any, concerned depends crucially on the due selection and prompt forwarding of the specimen. These matters have lately been given special attention in India, with the result that, in the Poona district, in the first eight months of 1925, 90 per cent. of the cases examined were found to be bacillary, as against 9 per cent. in the first ten months of 1924, and that most were Flexner-type infections, another great difference, as we are told in a valuable, and at times entertaining, paper by Major J. A. Manifold. As a result, more cases are now treated with serum and salines, fewer with emetine. The urine being passed elsewhere, the stool is collected in a dry, clean bedpan free of antiseptic; a specimen of mucus, as free as possible from fæces, is sent to the laboratory forthwith, the time at which passed and the reaction of the mucus being stated; a film of the mucus and an emulsion thereof in neutral glycerine, 30 per cent. in normal saline, accompany the specimen. If amœbic dysentery is suspected, three fixed films of mucus are sent, and, if cysts are likely to be present, an emulsion in triple strength Gram's solution. All pathologists and others interested in such cases should read this paper for its discussion of laboratory technique, the risk of confusing with *E. histolytica* endothelial cells which have ingested red corpuscles, the inagglutinability of early Flexner cultures and other details, which they will find most helpful. Other excellent articles in this particularly good number are: Venereal Prophylaxis at Singapore, by Lieut.-Colonel P. Hope Falkner; Chloramine Treatment of Water in the Field, more effective than chlorination and without bad taste, by Major C. H. H. Harold; and Large Scale Incineration in the Tropics, by Major A. L. Otway.

TROPICAL DISEASES BULLETIN, February, 1926.—This number contains an especially valuable critical review on yaws and syphilis by H. S. Stannus. In his survey of the literature of the last six years he has included such little-understood conditions as goundou, juxta-articular nodules, and gangosa. The controversy as to the exact relationship of yaws to syphilis, and vice versa, continues to excite attention and is, apparently, still far from solution.—C. M. Wenyon is responsible for résumés of work on kala-azar, relapsing fevers, and other spirochætoses. Rat-bite and yellow fevers are also dealt with by the same reviewer.—A section on malaria by Clayton Lane contains some 50 abstracts, the chief of which is a record of the proceedings of the International Malaria Congress held in Rome in October, 1925.

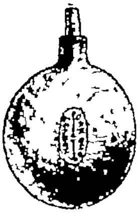
# New Inventions.

## SUCTION DILATOR.

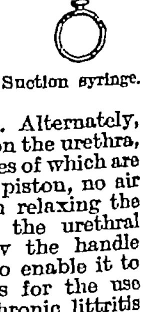
THIS instrument is a modification of Kollmann's dilator to enable suction of the urethral surface to be carried out while the urethra is in a state of dilatation. The central rod of the dilator has 12 openings connecting with a hollow central tube and surrounding this tube are the dilator blades. The blades and central rod can be detached from the rest of the instrument by thumb-screw, thus enabling the instrument to be satisfactorily cleansed and sterilised. When the dilator blades and rod are attached to the whole instrument the central opening is continuous to the side taps A and B. Side tap A is the flushing tap to enable the dilated surface of the urethra to be washed with an antiseptic. The tap B can be utilised as the outflow for the antiseptic; it can, in addition, be used as a suction tap either prior to or subsequent to the washing of the urethral canal. To enable suction to be carried out on the dilated urethra, the dilator is inserted into the urethra with the usual precautions and gradually dilated up. A Bier's bulb, with a valve inserted in the bulb so that on compression of it no air is forced into the urethra, is attached to tap B. Alternate pressure on bulb and relaxation of this pressure exercises the necessary suction and creates a negative pressure on the urethral surface. Alternately, and to obtain greater negative pressure on the urethra, the suction syringe may be used, the valves of which are so arranged that, on pressing home the piston, no air is introduced into the urethra, while on relaxing the piston strong suction is exercised on the urethral surface. By means of a thumb-screw the handle can be detached from the instrument to enable it to be satisfactorily sterilised. Indications for the use of this instrument are subacute and chronic littritis and lacunitis and subacute and chronic infiltration of the submucous tissues. Considerable suction can be exercised on the mucous surface of the dilated urethra without damaging the epithelium. The venous congestion set up by the negative pressure inside the urethra tends to hasten absorption of submucous infiltrates.



Suction dilator.



Bier's bulb.



Suction syringe.

This instrument has been kindly made for me by Down Bros., Ltd., 21 and 23, St. Thomas's-street, London, S.E. 1, and is made of stainless steel.

DAVID LEES, M.B., F.R.C.S. Edin.

# THE LANCET.

LONDON: SATURDAY, APRIL 3, 1926.

## PRINCIPLES OF TREATMENT IN RELATION TO NERVOUS DISEASE.

The Lettsomian lectures, delivered before the Medical Society of London by Dr E Farquhar Buzzard and published in recent issues of The Lancet, deal with an aspect of medical practice of much importance, indeed, his enumeration of therapeutic principles is applicable to quite other departments of medicine than that of neurology Although not stated by the lecturer in so many words, perhaps, one of the most vital of these principles, as far as its possibilities for good or harm are concerned, may be expressed in the form of a question as follows To what extent should the patient be informed of the position of professional knowledge in regard to the curability or otherwise of his disease? Dr Buzzard adopts the view, which some may think even in regard to nervous disease unduly pessimistic, not to say nihilistic, that physicians have no pretensions to curing disease and that they are in a position to act only as Nature's allies and agents. Assuming this attitude, he would thereupon take the patient into his confidence and in well-chosen words outline what is known of the action of various remedial drugs or other medicaments, he would sketch, possibly, the pathology of the particular affection, and would then say that while certain therapeutic procedures, often asked for by the patient himself, are, in fact, useless, some improvement might be possible by certain other methods, though the morbid process itself is still without any proved, specific, antidote The Parkinsonian would be told to place little or no reliance on treatment, the neurosyphilitic would be informed that treatment is to go on for the rest of his life, the patient with progressive muscular atrophy or bulbar palsy would learn that the cause of his affection is unknown and that no trustworthy remedy exists.

These, it will be seen, are merely examples of how the general principle works in particular cases, and it is clear the adoption of such an attitude on the part of the physician requires a degree of moral courage as well as a due modicum of personal tact and sympathetic insight We think the experience of all who are in a position to express an opinion that carries weight will be in favour of the plea that the patient should be taken into the physician's confidence, provided the former is of sufficient intelligence to appreciate the facts, and of sufficient level headedness to discount beforehand any depression of spirits such information may entail. On the presence of these two features in the "make up" of the individual concerned much obviously will depend Over and over again in clinical medicine is the doctor called on to decide whether absolute honesty is the best policy, and whether, as Dr Buzzard says with truth, he will run the risk of losing some patients while he endeavours to save them the misery of those alternating hopes and disappointments which are the lot of the incurable seeking cures The problem is age-old, and probably no hard and fast solution of universal applicability is practicable Some patients do not want to know medical details about themselves, and do not wish for blunt acquaintance with prognostic and therapeutic facts, where ignorance is bliss, they may quote with approval, *'tis folly to be wise* Others, again, may be judged not to be composed of such stuff as will resist the blow which full revelation of the nature of their nervous malady will strike them Still others will listen unmoved to sentence of ultimate death, as it may amount to, and yet not accept the decision as final They will not entertain the idea of incurability, even though the physician qualify his pronouncement with some emendation such as "in the present state of our knowledge", they will catch at any straw floating on the stream bearing them away, and who is to say human nature errs in this respect? What constitutes incurability? And how are we to know that this or that novelty in neurological therapeutics is valueless unless it is given a long and fair trial? Indeed, it is a sort of stock argument with those who resort to unqualified practitioners and for whom Dr Buzzard has a scathing comment that not a few of our recognised therapeutic methods owe their inception to the empirical discoveries of individuals outside the ranks of the orthodox profession. While we must be prepared to ignore the misapplication of this argument it is well, we think, not to be too dogmatic in respect of incurability, or too modest in regard to what we may be able to accomplish. After all, each case should be decided on its intrinsic merits, while we can legitimately inform the Parkinsonian that hitherto no specific treatment has been unearthed, or the bulbar paralytic that the specific remedy is the discovery of the *elixir vitæ*, we need not confess to entire therapeutic helplessness. With the right kind of patient, intelligent enough to realise his own and his physician's limitations, it is a pleasure often to coöperate in the endeavour to try out, it may be empirically, some remedial measure, some novel therapeutic technique, which at least furnishes him with the mental satisfaction that something is being done Such efforts call to deep seated instincts within the sufferer's breast and are not wisely relinquished. For not a few nervous affections our attempts at treatment would be more scientific were we not too often wedded to conceptions of them gleaned solely from consideration of their morphological pathology. Examination of the morbid material obtained from a case of anterior poliomyelitis or of disseminated sclerosis provides us with little information in regard to the processes at work, and still less in respect of the postulated virus. Not until experimental pathology took charge of research concerning the former of these was any real advance made in the direction of rational treatment, and the same lesson will have to be learned in connexion with the latter Dr Buzzard extols, rightly, as most will agree, the usefulness of arsenic and arsenical compounds for cases of disseminated sclerosis, yet their employment is not based on a rational or scientific therapeusis, since the cause of the disease remains undiscovered, however near we may be to that desirable eventuality. Similarly, with the use of bromide in epilepsy—its clinical value is justly stressed by the lecturer, even if the intimate nature of the affection is as elusive as ever, and its origination as indefinite as in the days when epileptics were judged to be possessed As far as these and other neurological ailments are concerned, incurability must be a relative and not an absolute term, at any moment the phase of uncertain knowledge may be succeeded by that of certain knowledge, and the disease from pathogenic obscurity into the full lig from ætiological solution

It is interesting and noteworthy that should assign prominence to psychoth it to be still the most valuable weapon we possess for every-day use in our array of remedial agents. He uses the term in its widest sense, and regards it as an essential factor in the treatment of all patients suffering from organic disease. Doubtless few will be found to quibble with this contention, since all clinicians who impress their personality on their patients, winning their confidence and trust, and paving the way for coöperation, are, as a fact, exercising psychotherapeutic principles whether they realise it or not. Generations of physicians have done the same before us. But the neurologist is more concerned with the technical usefulness and usableness of strict psychotherapeutic procedures in the handling of the classes of patient he meets in practice. According to Dr. Buzzard the only psychotherapy permissible for the manic-depressive psychotic is "sympathetic encouragement and the daily audience of his woes"; the anxiety neurotic, on the other hand, requires mental probing and investigation, as does the psychasthenic, who suffers from phobias and compulsions. The hysterical patient, too, is a fit subject for the art, which is stated to include suggestion, education, and investigation methods. It would be informative to have in some critical shape the embodied experience of neurologists as regards the results obtained by recourse to these procedures; data bearing on recovery, relapses, and recurrences, on amenability to treatment of different clinical types, on the influence of the methods on constitutional as opposed to symptomatic phenomena, would prove of service. If psychotherapy is as indispensable as it is claimed to be, the clinician should not only familiarise himself with its technique, but should be instructed in the art of selecting methods for cases; psychotherapeutic knowledge should be much more systematised than it is at present, more standardised, more accessible. But our psychotherapists disagree among themselves; hypnotic measures are effectual in the hands of some and permanently tabooed by others; psycho-analysis is a therapeutic sanspareil according to one school, and distinctly over-rated according to another; Couéism, so to describe it, answers all the calls that are made on it, according to a third. The physician who would be true to himself and who fights shy of any treatment even remotely suggesting charlatanry or humbug is sometimes hard put to it to deal effectually with the minor psychoneurotic disorders that abound in these days; his position would be strengthened were he able to refer to a consensus of medical opinion as to the relative usefulness of different forms of treatment. The profession will not be lifted above rivalry with quacks, as Dr. Buzzard urges, unless therapeutics are based on sound knowledge derived from anatomical, physiological, and psychological considerations; however arduous the road to follow, and it becomes more laborious with every increase in medical lore, we cannot imagine the profession as a whole even hesitating to face it.

## THE INTOXICATED MOTOR DRIVER.

In Monograph No. 1, issued by the True Temperance Scientific Committee, and entitled the Problem of the Intoxicated Motor Driver, there is much that is true, temperately stated, and scientifically interesting. The law is not perfect, though Section 40 of the Criminal Justice Act of 1925 (which comes into force next June) modernises it by definitely penalising "any person who is drunk while in charge on any highway or other public place of any mechanically propelled vehicle." It is not certain, however, that the Committee will cure the law's imperfection by its recommendation that the words "drunk" and "drunkenness" shall be expunged from the statute book, and that emphasis be laid rather "on the incapability, disorderliness, nuisance, or danger resulting from the alcoholic intoxication." To eliminate "drunkenness" and to let the word "intoxication" stand will leave the old problem unsolved. The Committee's argument is that the law objects not so much to drunkenness in itself as to drunkenness in relation to environment or occupation; the legal offence is not being drunk, but being drunk and disorderly, drunk and incapable, drunk in charge of a child, or in possession of fire-arms, and so on. But this is not the whole story. Simple drunkenness, unaccompanied by other conduct on the part of the drunken person, does exist upon the statute book; the offence may consist partly of conduct on the part of some other person who may be perfectly sober. There is the offence of permitting drunkenness on licensed premises, procuring a drunk man a drink, selling him fire-arms, or taking a pawnbroker's pledge from him. The law, of course, is more concerned with what a man does than with what he is (the Post Office Act even uses the words "guilty of an act of drunkenness"); it is easier to prove what he does than what he is. But in the end we come back to the necessity for some simple word like "drunk" which all can understand. "His gait was unsteady," says the police witness, "his breath smelt of alcohol, his face was flushed, his pupils were dilated ——" "Yes, yes," interrupts the magistrate, who is willing to leave these symptoms to cross-examination, "what we want to know is, was he drunk?"

The Committee goes on to recommend that, until the law gets rid of the word "drunk," magistrates should be allowed to interpret "drunkenness" in different degrees according to the circumstances. "Thus," says the monograph, "a motorist would be defined as drunk at a considerably lower degree of intoxication than would be required for a pedestrian and at a slightly lower degree than for the driver of a horse-drawn vehicle." Degrees of drunkenness and of danger are already taken into account at present in assessing penalties; if the Committee means that a magistrate is to convict as "drunk" a motorist who is not quite drunk, fresh legislation will be required. Finally, the Committee refers hopefully to the urine test for alcoholic concentration. Dr. Godfrey Carter's paper on this subject, read to the Medico-Legal Society last January, was reported and discussed in The Lancet[1] at the time. Dr. H. W. Southgate, who (as our report showed) then explained the tests on alcohol concentration in blood and urine which he had been conducting for four years, is one of the True Temperance Scientific Committee whose names appear on the monograph under the presidency of Sir James Crichton-Browne. The Committee observes: "The urine test for alcoholic concentration, if clearly proved to be reliable, should be adopted as a routine test, a portion of the urine being always reserved for the examination if desired by the individual's private doctor and by some responsible analyst as well." This is an admirable proposal, subject to obvious qualifications. In the first place, persons who have just been taken into custody will not necessarily submit to tests which are voluntarily undergone in the course of medical examination on other occasions, nor are the courts likely to accept refusal as indication of guilt. A more important reservation is already indicated by the Committee's words "if clearly proved to be reliable." Proof will be clear only when it is no longer possible for a defendant to produce medical evidence that the urine test for alcoholic concentration is unreliable. This is by no means yet the case, but the investigation is at any rate promising, and the Committee does well to draw attention to it. There is plenty of room for philosophic and scientific inquiry into the questions "What is drunkenness?" and "What is true temperance?" and there is certainly no occasion when the diagnosis of drunkenness requires more anxious consideration than where the action of a motor driver is concerned.

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[1] The Lancet, Jan. 23rd, 1926, pp. 188, 207–09.

# INTERNATIONAL HEALTH ORGANISATION.

INFORMATION as to public health progress each year in various countries has not hitherto been available in a form convenient for comparison. Handbooks setting out the conditions under which the national health is officially and unofficially promoted in certain countries were published in 1924 and 1925 under the auspices of the League of Nations,[1] but though a detailed questionnaire had been circularised there was little uniformity in the sequence or even the substance of the data supplied. Moreover, the development of public health activity is rapid, especially in those countries whose method of government has been reconstructed since the war. Recognising that changes in legislation and procedure are constantly taking place, the Health Section of the League of Nations have arranged to supplement the information offered in the handbooks, each of which was prepared by a member of the health administration concerned, by the issue of an annual progress report, in which the more important developments of the preceding 12 months in each country are reviewed. In the first of these reports, which bears the title International Health Year Book, 1924, it may be said that the current activities of 22 countries are described, for legislation passed or statistics recorded any time up to the first part of 1925 are included. In these summaries, which vary in length from the brief eight pages emanating from Canada to the 42 pages supplied by Spain, an effort has obviously been made to collect information as far as possible under corresponding headings for each country. Not all the authors have fallen in with the scheme, but most of the reports are divided into four or five sections. In the first of these, area, population, birth- and death-rates, infantile mortality, and budgets are set out. The second describes recent reforms in health administration and legislation. The third is devoted to preventive medicine and hygiene, under the subheadings tuberculosis, cancer, venereal diseases, malaria, trachoma, alcoholism, maternity and child welfare, and mental hygiene. The fourth section, entitled curative medicine, discusses hospitals, sickness insurance, numbers of doctors, students, and midwives, and medical education. A fifth more general section is mostly devoted to the control of foodstuffs, drugs, and biological products, while notes on housing and methods of health propaganda also find a place. Even where this orderly arrangement has not been followed, an admirably compiled index enables students of a particular subject to pick out the relevant section in each of the 22 articles without effort. Those who wish to compare each nation's methods of combating tuberculosis, venereal diseases, or diphtheria will see at a glance where to find them without having to read about drainage systems, hospitals, or budgets. Incidentally, the figures given under the last-named heading are the least profitable, since without a table of the relative values of the national currencies and an estimate of the cost of living no useful comparisons can be made. Those countries which do make a statement on the cost of living—Bulgaria and Latvia—have to record a continuous rise. In Bulgaria the index, calculated as 100 for the years 1901 to 1910, had risen to 2192 in 1920, since then increasing every year to 3703 in 1924. The State has since attempted, by offering the communes credit for food-supplies, by an alteration in its export policy, and by the establishment of cheap railway tariffs, to check any further advance.

The relapse into less civilised conditions which has been the fate of many of the belligerent European countries is manifest, but their painful struggles to recover from the degradation caused by severe economic distress are no less evident. In Bulgaria an epidemic of typhoid fever in 1924 (7127 cases against 2790 in 1923) is attributed to lack of drainage, of sanitary conveniences in houses, and of a supply of pure drinking water. The prevalence of trachoma in Slovakia is said to assume the character of a social scourge affecting 50,000 out of the 3 million inhabitants. Energetic measures to combat the disease, including free dispensaries under expert medical and nursing supervision, were initiated in 1924; in that year 118 communes with 60,000 inhabitants were examined and some 5000 trachoma patients discovered and treated. An unusually comprehensive system of sickness insurance has been instituted in Esthonia. This includes treatment in hospital when required, with full maintenance and assistance in confinements. From Germany comes the welcome news that the mortality from tuberculosis was considerably lowered in 1924, but the incidence of the disease has apparently increased. In the section on medical education the numbers of medical students at German Universities is given for the years 1921 to 1924. The men students decreased in number steadily from 18,933 to 7728 during this period; the women also decreased, but only from 1937 to 1328. Greece reports a satisfactory situation with respect to epidemics. During the last 12 years of all the Balkan countries Greece has had the fewest victims from cholera, small-pox, and typhus. Moreover, in 1924 those diseases which were epidemic in 1923 have been checked—for example, encephalitis lethargica claimed only 13 victims, with 3 deaths, against 694 with 84 deaths. In Latvia, as a legacy of the old Russian administration, there remain some 160 registered "assistant doctors" who are allowed to practise within certain limits; it is stated that this profession will cease to exist in 10–20 years. The campaign against venereal disease in Austria is complicated by the increase in unregistered prostitutes, but is being actively pursued. In this country a law passed in 1924 defines the regulations for the practice of midwifery and provides for compulsory revision courses for midwives.

In contrast to the struggle of the war-spent countries to reorganise their health services is the steady progress made by some of the neutral countries and by the United States of America in their efforts to consolidate, improve, and extend systems which have had no rude set-backs. Administrative changes adopted during the period under review in these countries are concerned mainly with the further development of a public health organisation of proved value, or with State control of activities started by voluntary enterprise. In 1924 official recognition by the Spanish Department of Public Health was given to the anti-malarial organisation set up during the previous four years. An extensive campaign has now been undertaken under the direction of a central committee. A six months' course has been organised for ten doctors chosen from among the applicants; three months are spent in laboratory work followed by three months' training under supervision in a malarial district. This course was started in April, 1925. In the United States many important health matters are not under the jurisdiction of the Federal Government, but are controlled by the several States. The section on recent developments in health administration and legislation records for the most part laws which have only local significance. For example, in six of the States but not in the rest, a man must produce a certificate of freedom from venereal disease before receiving a marriage licence. Other even more curious anomalies are manifest if this section is carefully studied. It may be that the method of trial on a small scale is likely to lead to good results, especially if legislative assemblies profit from the experience of neighbouring States. Similarly a study of the International Health Year Book, supplemented by the exchange of visits between European public health officials organised from time to time by the League of Nations, should enable the older countries to learn from each other and to discover the most effective ways of coping with existing causes of ill-health and preventing the introduction of fresh ones.

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[1] See THE LANCET, 1925, ii., 652, 719, 771, and 885.

# Annotations.

"Ne quid nimis."

## THE NEW OPIUM POLICY OF THE INDIAN GOVERNMENT.

IN opening the Council of State last February the Viceroy of India announced a new policy of the Indian Government in the matter of the opium trade which is as welcome as it is revolutionary. This policy the Viceroy declared to be "in accordance with the trend of modern opinion in a number of other countries and also with views which have been freely expressed in some quarters on different occasions in India." Only four years ago the India Office, in an official statement entitled "The Truth about Indian Opium," maintained that the Government of India stood unhesitatingly on the findings of the Royal Commission of 1893–95. That report justified the Government opium monopoly, the Indo-Chinese trade, the export of Indian opium to the Far East, and demurred to the loss of revenue which the surrender of such trade would involve. It is true that Lord Morley, when Secretary of State for India, admitted that the report of that Commission had failed to carry conviction, yet even at the Geneva conferences in 1924–25 the British delegates expressed themselves as quite satisfied with the present system of production and distribution of opium by the Indian Government and maintained, "Everything is controlled by the Government, and effectively controlled." The Indian Government's representative at Geneva described his Government's policy as that "of deriving the maximum of revenue from the minimum of consumption." There has undoubtedly arisen a strong movement in India itself against the Government policy both in the matter of purveying opium for eating to the natives and of exporting large quantities of the drug well knowing it is to be used for smoking purposes. A booklet recently published by the Student Christian movement from the pen of Mr. C. F. Andrews, entitled "The Opium Evil in India," has drawn attention to the evils arising from addiction to the drug especially in the cities, while the report of the "Assam Congress Opium Enquiry" gives evidence of the prevalence of abuse of the drug in that province both by eating and smoking and of the need to limit its production to what is necessary to meet legitimate medical requirements.

The new policy, now announced, while throwing over the official apologists for past action, is intended "to reduce progressively the export of opium to all destinations so as to extinguish the trade altogether within a definite period except for strictly medical purposes." It is recognised that "this policy will involve a corresponding reduction in the amount of opium produced": if it is also held to involve the reduction of the supply of Government opium for internal consumption to that required "for strictly medical purposes," it will have achieved the objects at which the International Opium Convention of 1912 was presumed to have aimed.

## THE BIRMINGHAM MEDICAL INSTITUTE.

THE *Birmingham Medical Review* first appeared in 1872 as a quarterly journal. After a while it became a monthly, and it only ceased publication with its 470th number owing to the difficulties of the war. N[illegible] g a welcome return in a new series, of which the first copy[1] appeared in January, incorporating the *Midland Medical Journal* as well. It is the official journal of the Birmingham Medical Institute, which entered its new premises in Great Charles-street in 1924, and, under the presidency of Colonel Frank Marsh, has become more and more firmly established as the centre of medical life in the city. The Institute has a valuable library of 16,000 books to which additions are continually being made; there is a comfortable reading-room with a large number of current periodicals, and light refreshments can be obtained in a tea-room. It is used for the meetings of the local branch of the British Medical Association, the Midland Medical Society, the Midland Obstetrical and Gynæcological Society, and the Birmingham and District Medical Women's Association. The Panel Committee is also housed there. The Midland Medical Society is now a section of the Institute, and it is to be hoped that much good will come of these coördinated arrangements. The *Review* itself is an excellent production. It is edited by Dr. K. D. Wilkinson, who has the assistance of a representative editorial committee, with Prof. W. H. Wynn as chairman, and it deserves a large circulation. The first number contains the first Ingleby Lecture for 1925, delivered at the University of Birmingham by Dr. J. G. Emanuel on Auricular Fibrillation, and an entertaining address by Dr. A. V. Bernays mainly on the text "Knowledge comes, but wisdom lingers." There is also an article on the Treatment of Acute Perforative Peritonitis by Mr. G. P. Mills, and a memoir of Dr. William Withering by Prof. Wynn. The journal should do much to encourage medical men to join the Institute, the membership of which at present stands at only 262. It is hoped to arrange for a composite subscription to include use of the buildings, membership of the Midland Medical Society, and the receipt of the *Review*.

## MECHANICALLY-COOLED REFRIGERATORS.

ONE of the most interesting features of the *Daily Mail* Ideal Home Exhibition at Olympia was the display of electric refrigerators. Several firms showed a considerable range of these appliances, all designed for running from ordinary house lighting circuits. The principle of most of the refrigerators is the same and depends on the rapid absorption of heat from the surrounding medium occasioned by the boiling of sulphur dioxide under reduced pressure. The gas system is a closed circuit of metal tubing connected with a cylinder of liquefied sulphur dioxide. This part of the apparatus is charged before the refrigerator is installed and needs no attention, as the gas is re-condensed automatically and used over and over again. The reduction of pressure and circulation of the gas is maintained by a small suction cylinder operated by an electric motor, the whole apparatus being neatly arranged in the base of the refrigerating cabinet. Both British and American models are to be had, the former being run by a quarter horse-power water-cooled engine, the latter by a half horse-power air-cooled type. The cold water system of the British model, shown at the "Freezone" stand, is claimed to reduce the cost of running, and enable the machine to work at very low pressures. The air-cooled models are slightly less trouble to fit up as it is only necessary to have a wall-plug and switch to complete the connexion. The "Electrolux" unit differs from the "Frigidaire" and from most of the others in that its efficiency depends not on sulphur dioxide but on the evaporation of ammonia inside a hermetically sealed apparatus. No compressor with valve and therefore no motor is required, but only a small quantity of heat—which may be supplied by electricity, gas, or oil—to start the evaporation and control the circulation of the refrigerant. Various sizes and shapes of cabinet are obtainable ranging from small household models to large cold-storage cabinets capable of holding carcasses of meat.

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[1] Birmingham Medical Review. Birmingham: Cornish Bros., Ltd. 1s. 6d.

All the outfits appear to be provided with some form of thermostatic cut-out, thus obviating loss of power and maintaining any required temperature from five degrees below zero upwards to room temperature. Fluctuations of temperature are guarded against by the presence, usually about the centre of the cabinet, of a large cold coil surrounding an ice-making contrivance. The ice is made by filling the special containers with tap-water, replacing them in the cabinet, and turning on the switch. The time required to produce ice depends on the setting of the thermostat and can be varied from two to six hours at pleasure. The cabinets are for the most part lined with white porcelain, all the angles being rounded to facilitate cleaning. The "Barnet" refrigerator, a Canadian production, is not mechanically cooled but is essentially an ice chest de luxe. It is very well insulated and has a ventilating system which prevents the possibility of stagnation of the air in the refrigerator when the doors are closed. In this cabinet, such varied articles as kippers, Gorgonzola cheese, onions, coffee, and tobacco can be stored side by side for 72 hours without contaminating each other with their respective flavours. Under ordinary running conditions the inside temperature is maintained slightly below zero, so that the inside of the cabinet remains quite dry, an advantage over the usual form of ice-box.

Though appliances of this kind are widely used in American hospitals, in this country it is the commercial world rather than the scientific which has been the first to take up electric refrigeration—a fact which may be accounted for by the high price of the outfit. Compared with the initial outlay the running cost appears to be low, most refrigerators consuming from two to six electrical units in 24 hours. Once installed, the apparatus needs hardly any attention beyond an occasional drop of oil for the motor bearings, and the running is practically silent. The possibilities of electric refrigeration in hospitals and laboratories seem to have been somewhat overlooked up to the present, yet the possession of a low temperature thermostat working from the ordinary lighting circuit would be a great boon to many departments. Whether they are yet likely to replace ice-boxes for domestic use depends on the extent to which the initial cost can be reduced. A plea for the more extensive use in households of cold as a preservative of food is the substance of an interesting little volume just published entitled "Food Wisdom."[1] It contains illustrations and descriptions of various forms of ice-boxes and mechanically-cooled refrigerators. A paragraph purporting to estimate the comparative initial and the running cost of the different types of refrigerators in the home, begs the question since the price of the units is not mentioned. It is stated that the running cost of a good mechanically-cooled model should not exceed 2*d.* or 3*d.* a day, whereas the cost of replenishing an ice model is likely to be 5*d.* or 6*d.* daily, reckoning the cost of ice at ½*d.* per pound. These estimates admittedly depend on at least two variables, the retail price of ice in small quantities and the rate charged for electric current; and to deduce from them that for middle-class households the heavier initial cost of the mechanically-cooled apparatus will "soon be more than made up and there will be an actual saving" appears to us unjustifiable at present, though the statement may have prophetic significance. The present retail prices of the smallest model on the market of the mechanically-cooled refrigerator named above are "Frigidaire," £61; "Electrolux," £30 10*s.*; and "Freezone." The middle-class housewife in this temperate climate will hardly be tempted even by low-running costs to embark on such a purchase, for the days on which ice is anything but a luxury are few. However, the arguments set out by Mrs. Cottington Taylor in favour of using cold as a food preservative are unanswerable, and we trust that manufacturers will soon be able to give middle-class housewives an opportunity of profiting fully from her advice.

## DEEP DIVING.

THE *Laurentic* was a 15,000 ton Atlantic liner which was taken over by the Admiralty during the war and converted into an armed cruiser. Early in 1917 she sailed from Liverpool with five million pounds worth of gold bars for Halifax, and was sunk by mines off the Donegal coast in 120 feet of water. Diving operations were soon begun, the strong room reached, and a little of the gold brought up. A violent gale then interrupted operations, and when the divers were able to get down again they found that the ship had broken up and collapsed, and that the gold was buried at the bottom of the ruins. So they set to work to break and blast their way through the remains, and when operations finally ceased in 1924 more than 98 per cent. of the bullion had been retrieved, and that without loss of life or any serious injury. The bracing narrative of this triumph of applied physiology is told in the *Journal of Hygiene* (1926, xxv., 26) in a most interesting way by Captain G. C. C. Damant, R.N. (retd.), who was throughout in charge of the operations and who will be remembered as having collaborated with Prof. J. S. Haldane in working out experimentally the theory of compressed-air illness which found expression in the Admiralty rules for diving of 1907. These rules, based on the rates at which the body becomes saturated with nitrogen in compressed air, and at which it gets rid of the excess on returning to atmospheric pressure, were used in diving at the *Laurentic*, and, with one exception, proved very satisfactory; if anything, indeed, they erred on the side of safety. Experience showed, however, that a longer time ought to be allowed between two dives than the regulations suggest; getting rid of the last of the excess nitrogen absorbed under pressure takes longer than had been supposed, and Captain Damant found that lengthening the interval from one and a half to four hours was not really enough to make the second dive as safe as the first. In all, out of about 5000 dives at a pressure of about 55 lb. per square inch, there were 31 cases of illness. One was blind, one paraplegic, and two or three others had nervous symptoms; the pains in and about the joints, known as "bends," were the most frequent trouble. An adequate recompression chamber was provided on board the diving ship from the beginning. This, as Captain Damant points out, gave everyone confidence and proved quite efficient in curing the cases of illness. Violent muscular work during the ascent from the bottom seemed to help to prevent symptoms, and breathing oxygen after reaching the surface also appeared to be of value. Everyone will congratulate Captain Damant on a happy issue to a difficult and dangerous piece of applied physiology.

## AFTER-EFFECTS OF ENCEPHALITIS LETHARGICA.

SCHOOL medical officers have special opportunities of studying the results of encephalitis lethargica. Long after the acute stage is over serious alterations in the nervous system may appear and persist, increase, or slowly diminish through a period of several years. Information is needed as to the course and prognosis in these cases and the best way of dealing with them. Many parents will not keep these children under prolonged treatment and observation, so that practitioners and hospital staffs lack the opportunity to follow them up. But in the schools these after-effects and the conditions influencing them may be observed over long periods and in comparatively large numbers. In large towns, such as London, Liverpool, Manchester, and Bristol, data have been collected in the school reports, and in Sheffield the local medical research committee is studying the disease with the coöperation of the school medical officer. The main after-effects fall into four groups: (1) Parkinsonian syndrome; (2) other disturbances of motor nervous system, such as ocular paralysis and spasmodic movements; (3) mental impairment affecting mainly intellect; and (4) mental changes affecting emotion and volition. Some of the facts which school experience has elicited about these after-effects may be set out categorically thus:—

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[1] By D. D. Cottington Taylor, A.R.S.I. Assisted by P. L. Garbutt, A.I.C. London: Sir Isaac Pitman. 1926. Pp. 136. 2*s.* 6*d.*

(a) After-effects tend, on the whole, to be more severe and permanent when the illness has occurred in early life. (b) Various classes of sequelæ may occur almost independently or are at least not positively correlated—e.g., the cases showing the severest paralysis are often not those with the most mental changes. (c) Cases showing the most temperamental instability are sometimes the children of neurotic parents, and inquiry frequently reveals that the child showed definite signs of an unstable nervous system long before the illness. (d) Symptoms such as disturbance of sleep rhythm and ocular signs are found early and often diminish later, while changes in the nervous system and mentality manifest themselves much later. (e) Intellectual impairment, when it occurs, is not commonly severe enough to render a child suitable for education in a special school for mental defectives. (f) Prognosis is still uncertain, a fair proportion making more or less complete recovery, but those with definite signs of paralysis usually do badly. (g) Exclusion from school, especially in cases without paralysis, with consequent running the streets, usually is apt to make matters worse. (h) Many cases may profitably return to school after a few months' convalescence, the occupation and discipline being beneficial. (i) Many others can benefit from education and training, but need conditions somewhat different from those at an ordinary elementary school. (j) In a few cases where delinquency has brought them within the law, the firm discipline and care of an industrial school has had a good influence on the character, though there are others who have entirely failed to respond. (k) There are a few cases with marked intellectual failure which must be treated as mentally defectives, but the great majority are not suited for such treatment.

The consensus of opinion is at present in favour of dealing with these children as a separate group, certifying them, if necessary, as physically defective, and sending them to special classes attached to a school for the physically defective or to an institution such as that recently opened by the Metropolitan Asylums Board at Winchmore Hill. Either method should afford valuable experience for future guidance.

## ACCIDENT PREVENTION AND SCHOOL-CHILDREN.

The Third International Congress for Life-saving and First-aid to the Injured is to be held at Amsterdam next September, and we reported last week (p. 683) the meeting of the British Council which is helping forward the arrangements. The whole subject is now being studied from a wider standpoint. The statistician has been shepherding into the epidemiological fold occurrences usually designated "accidents"; at the same time modern views on their occurrence and their prevention have been undergoing great modification. The personal factor, entitled "carelessness," is now recognised to be far more responsible than obvious risk, such as unguarded machinery. This factor is being found to depend partially upon ignorance of risk and partially upon a definite predisposition to sustain accidents which are associated with ill-being or a predisposition to sickness. These views are only slowly being adopted in this country, but in America[1] they are being widely accepted, and are receiving practical application in many directions. Perhaps no extension is more interesting than a widespread scheme of safety education in the schools as an introduction to the prevention of accidents in industry and in later life generally; it is accepted by employers as a logical method of preparing for safety work in the factory and the mine. Accidents are divided into groups—e.g., street accidents, fire, falls, and so forth—one for each month of the school year. Safety committees are formed among children; scouts are set to guard street crossings coming to and leaving school; newspaper reports of accidents are discussed and essays are written. The spirit is introduced in class work; thus arithmetic is done on accidents figures, which are also used for making graphs, while for drawing safety-first posters may be used. Outside school hours fire-drill and games give other opportunities. The scheme does not discourage facing the element of danger, but teaches the right and most efficient way; it does not encourage cowardice, but instructs the brave. Just, however, as health is necessary to receptivity in all education, so here "an awkward, cautious child is more apt to get hurt than the child who apparently takes chances, but whose senses are keen and body responsive and under perfect control." Already 276 towns are reported to have introduced some form of safety teaching in the schools and results are becoming apparent. Motor-car accidents increased steadily at all ages from 1911 to 1919, but the next two years showed a decrease, mainly concentrated in the ages 5 to 15; in Portland, Oregon, accidents to school-children fell from 160 in 1920–21 to 60 in 1921–22; in Detroit the number of children killed fell from 96 to 30 in the year following the introduction of safety work. Will school medical officers please copy.

## RICKETY DEFORMITIES.

Recent discussions in Paris have revealed so much difference of opinion on the treatment of rickety deformities that the *Vie Médicale* (Feb. 26th) has held a kind of symposium on the subject. The impression gained from a study of all the contributions in it is that in France, and also perhaps in Switzerland and Italy, expectation of the spontaneous correction of these deformities is much stronger than in this country. Prof. Camera goes so far as to say that during the three years that he has been at the head of the children's surgical department at Turin he has not seen one case needing surgical intervention. Patients are nowadays brought for treatment at a very early stage, and it is gratifying to compare the present state of affairs with that of 20 or 30 years ago. In the 11 years 1895–1905 719 cases in Turin required surgical intervention. Among the French thalassotherapeutists—under which name are grouped those who believe in the specific virtues of sea air—some stoutly maintain that all, or nearly all, rickety curvatures disappear spontaneously at the seaside, while others admit that only in slight deformities can spontaneous cure be expected. The surgeons hold similar views, but less emphatically. They ask whether it is reasonable to leave the deformity alone for from two to five years at the expense of loss of stature and of probable static troubles. In this country it is a surgical commonplace that marked rickety curvatures are very seldom seen in the adult. What has become of the badly deformed rickety children of the end of the last century who were not operated on? There is no ground for assuming an excessive mortality among them, and it is necessary therefore to accept the hypothesis of spontaneous correction, despite the probable presence at one stage of extreme eburnation. Probably most British surgeons, in the national spirit of compromise, would decline to accept hard-and-fast rules. They would consider it bad treatment to keep a child off its feet for years, under all the developmental drawbacks thereby entailed, when in slight cases by the use of splints and in severe ones by osteoclasis or osteotomy the period of recumbency can be either avoided or enormously shortened—to the great gain of the child's physical and mental development.

## THE HEALING OF GASTRIC ULCERS.

The most striking difference between gastric ulcers produced experimentally and those encountered in human subjects is, perhaps, that the former are a type of ulcer in which it is extremely difficult to prevent healing from occurring, whilst in the latter chronicity is a prominent feature. So much is this the case that it has occasionally been alleged by responsible surgeons that chronic gastric ulcers in human subjects never heal, and that therefore gastrectomy is the sole logical treatment to be advised. Such extreme views can scarcely be supported, but it is certainly true that conclusive evidence of the healing of gastric ulcers in human subjects is difficult to produce. The observations of Nielson[1] point to definite healing in a considerable number of cases traced during 22 years, though the proportion of permanent cures was low in the more chronic group of ulcers. Recently, X ray observation of cases during and subsequent to medical treatment has tended to show the disappearance of ulcer craters, but such evidence requires much repetition and skilful application in order to be convincing. Peculiar interest, therefore, attaches to a recent paper[2] by Crohn, Weiskopf, and Aschner of the Mount Sinai Hospital, New York. In a number of cases of peptic ulcer these observers have been able to demonstrate the disappearance after treatment of the ulcer niche seen with X rays. But in addition to this they produce final evidence not only from subsequent laparotomies, where the healed ulcer has been visible and palpable to the surgeon, but also in several cases where partial gastrectomy has allowed microscopic examination to be carried out of sections through the scars of the healed ulcers. A very long history or a previous dangerous hæmatemesis had justified operative treatment in these cases, and the histological sections showed the process of healing to have consisted of obliteration of the crater by the growth of firm granulation tissue from the sides and base of the ulcer, the lateral surfaces becoming approximated and healing finally accomplished by the ingrowth of epithelial tissue from the sides of the wound. Whether such healing is permanent is, of course, not certain, being decided probably by circumstances which vary in different cases. It is of interest to note that in this series of observations the writers have come across several examples of the so-called "hæmatemesis without lesion," in which no evidence of ulcer was obtainable, but in which a chronic ulcer became demonstrable in later years.

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[1] ty Education of Children as a Factor in the Pre-
Industrial Accidents, Industrial Safety Survey,
ecember, 1925, vol. i., No 5, pp. 125–134.

## THE HISTORY OF COLLOIDAL CHEMISTRY.

THE summary of the historical aspect of colloidal chemistry, to be found in nearly all of the many books recently published on this subject, tend usually to follow the same pattern. There is a fleeting reference to Faraday, and a detailed account of the researches of Thomas Graham, universally hailed as the father of colloids. Next we are led to consider Brown's observations on the phenomenon first described by him, and later we advance to the present-day views via Zigmondy and his co-workers. Practically every book in every language commences thus. Those prepared for a familiar repetition in the French language of this well-known story will be gratified on opening a book by Prof. W. Kopaczewski[3] to find facing the title page the photograph of one Francesco Selmi, whose name is probably unknown to them. They will be still more interested to find from the first chapter that the history of colloids dates from the writings of Bernard de Palissy in 1561. According to Prof. Kopaczewski colloidal sols of gold were prepared by the alchemists in the Middle Ages for drinking purposes. He describes research by quite a number of alchemists and chemists in 1674, 1701, 1707, and 1801. He then introduces us to the researches of Francesco Selmi, who in 1830 to 1854 distinguished between colloidal and true solutions. Graham came on many years later, and, according to the author, merely added the name "colloids," and applied the methods of diffusion. Prof. Kopaczewski sums up his view by stating, "Selmi est incontestablement le créateur de la science des colloides." This does not end the shocks to our classical views as to the history of colloids. Brownian movement was not apparently first seen by Robert Brown in 1827, but had been observed by Buffon and by Spallanzani years before. The historical summary lays great stress on the work of Marian Smoluchowski upon the mathematical side of the question. The fact that the rest of the book proceeds upon orthodox lines, and is a complete, up-to-date summary of modern views upon colloids, suggests that the author's historical researches have been conducted with the same critical judgment, and it seems likely that our conviction that British observers were the first to call attention to colloidal properties is mistaken, though it is probable that Graham worked at the subject independently and without knowledge of Selmi's researches.

## BRITISH ASSOCIATION MEETING.

THE British Association for the Advancement of Science will meet this year at Oxford from Wednesday, August 4th, to Wednesday, August 11th, under the presidency of H.R.H. the Prince of Wales, who succeeds Prof. Horace Lamb in the chair. His address, delivered on the first evening in the Sheldonian Theatre, will be relayed to the town hall, and, if necessary, also to the hall of the Oxford Union Society. Sectional addresses will be given by Prof. J. Graham Kerr (Zoology) on Biology and the Training of the Citizen; Dr. J. Drever (Psychology) on Psychological Aspects of Social Punishments; Prof. H. J. Fleure (Anthropology) on the Evolution of Human Races; and Prof. J. B. Leathes (Physiology) on Function and Design. During the meeting papers will be read on the Value of Tissue Culture in Biology, on the Training of the Zoologist, and on Inheritance of Physical and Mental Characters in Man. A discussion on Secondary Sexual Characters will centre around the respective parts played by inherent cell-organisation and by hormones in the development of the manifestations of sex. Prof. J. S. Haldane will lecture on Acclimatisation to High Altitudes. The sections will meet in the University Museum, the Clarendon Library, and various colleges and schools. Receptions will be held on the evening of August 5th by the Vice-Chancellor of the University and by the Mayor of Oxford, and public lectures have been arranged for every week-day evening during the meeting. Applications for seat tickets should be addressed to the Secretary of the British Association, Burlington House, London, W. 1.

## COLONEL ALCOCK'S RETIREMENT.

Lieut.-Colonel A. Alcock, F.R.S., who in 1907 was appointed director of entomology in the London School of Tropical Medicine, and having reached the age-limit in July, 1924, was invited to continue in his post, when the London School of Hygiene and Tropical Medicine was founded, has now retired. His work has meant so much to the School that it was natural for his friends and colleagues to make some occasion for giving expression to the high esteem in which he was held by those associated with him, and a presentation of a suitably-inscribed loving-cup to him and Mrs. Alcock was made by the School on March 23rd, when Dr. Andrew Balfour wished them many years of continued happiness and assured Colonel Alcock that the School would not forget him. Colonel Alcock had reached the assistant chair of zoology in the University of Aberdeen before joining the Indian Medical Service in 1885, and it was not long before he found proper outlet for his bent in becoming surgeon-naturalist to the Marine Survey of India. After this he was for 11 years superintendent of the Indian Museum and professor of zoology in the Medical College of Bengal. His book on entomology for medical officers, which has passed through more than one edition, was no formal text-book, but was written with the definite aim of clarifying the entomological borderland so as to enable medical men to recognise and follow up the insects and kindred creatures that invade the medical domain. Few books have served their purpose better than this book, whose scholarly writing makes it a pleasure to read and study. The dedication to Sir Patrick Manson, whom Colonel Alcock greatly revered, is in words which are now as applicable to the author himself:—

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[1] Acta Med. Scandinav., 1923, lviii., 280.

[2] Arch. Int. Med., 1926, xxxvii., 217.

[3] Introduction à l'Étude des Colloïdes. By W. Kopaczewski, Docteur en Médecine ès Sciences, Professeur à l'Institut des Hautes Études de Belgique. Paris: Gauthier-Villars et Cie. 1926. Pp. 226. Fr.15.

> "First he wroghte, and afterward he taughte;
> But in his teaching discreet and benigne."

Colonel Alcock has been succeeded as director of entomology by Dr. P. A. Buxton, but we may express the hope that he will long continue to illumine the subject of tropical medicine by his teaching in public and private.

### THE VIRTUES OF THE ULTRA-VIOLET RAY.

FOR a generation most of us have recognised in a general way the value of the hygienic-dietetic régime in tuberculosis without inquiring very closely into the precise credit to be given to its various factors. Only recently has ultra-violet radiation come to claim a large share in the physiological uplift. At the Cambridge Conference, reported on another page, Dr. James Crocket expressed his opinion that even in pulmonary tuberculosis ultra-violet radiation may prove useful, although he gave a timely warning against regarding it as a substitute for other recognised treatment. In local tuberculosis, where phototherapy has come into wide use, its application is still empirical. At the Harveian Society on March 18th an interesting discussion took place on Treatment by Ultra-violet Rays, which Dr. Halls Dally summed up well by the remark that it was extraordinary how opinions could differ, and that at present our knowledge was very scanty. The well-known views of Dr. Leonard Hill, who opened the discussion, were challenged by Dr. Gordon Pugh, an abstract of whose address appears on page 741. He does not see reason to accept the prevalent idea that light imparts some special bactericidal power to the circulating blood. In his experience the undoubted beneficial effects of the open air are rather due to increased metabolism—from exposure of skin and the breathing of cool air—than to any special virtue in the rays of the sun. Has any new therapeutic principle really been introduced? he asks, or is it that fresh air and surface hyperæmia—those well-established healing agents—are only appearing again in another form? Dr. Pugh's own experiments have not led him to agree with Dr. Rollier's opinion, now so generally accepted, that the more a patient's skin becomes pigmented the better will be the protection against tuberculosis. A close parallelism between pigmentation and favourable prognosis would, of course, indicate that sunlight was the potent agent; but in Dr. Pugh's cases there has been no such parallelism. His opinions may nowadays be thought heretical, but Dr. Hill was right in pleading that they should not be forgotten in the report of the Biological Light Committee of the Medical Research Council. Dr. Hill was far from accepting them himself. Like Dr. Pugh, he said, he had begun by attributing the virtue of the open air to metabolic changes, but investigation of the claims of Bernhard and Rollier had made him modify his views very much, and now he was fully persuaded that light had a very powerful action. It was not unlikely, he thought, that some of Dr. Pugh's successful cases, in which there had been no sunlight treatment at first, had received great benefit from skyshine, which was very rich in ultra-violet rays.

ON March 29th Sir John Rose Bradford was elected President of the Royal College of Physicians of London in succession to Sir Humphry Rolleston, who retires after four years of office. Dr. R. O. Moon was elected assistant registrar.

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CHESTERFIELD ROYAL HOSPITAL.—Although an additional ward was opened a year ago there is a waiting-list of nearly 4[illegible] [illegible]nd it is estimated that an expenditure of between £50[illegible] [illegible]00,000 will be necessary to meet the growing d[illegible] the institution.

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# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXVII.—THE TREATMENT OF TETANUS.

### *Prophylaxis.*

THAT prevention is the best form of treatment in tetanus was proved during the war. Even if the disease develop after prophylactic serum, the incubation period is much prolonged, the symptoms are usually mild, often remain localised, and the condition is considerably more amenable to treatment. Consequently, in all wounds likely to have been contaminated with soil or external clothing, especially punctured or lacerated wounds, it is wise to give a prophylactic dose of antitetanic serum. This can be administered either subcutaneously in the abdomen or flank, or preferably intramuscularly in the gluteal region, or in the vastus externus muscle on the outer aspect of the thigh. The initial dose should be at least 500 units (U.S.A. standard); in heavily contaminated wounds, or when several days have elapsed since the injury, 1500 units must be given. The wound itself should be thoroughly cleaned up, all foreign bodies, clots, sequestra, and necrotic tissue being removed. Finally, the wound is thoroughly swabbed with tr. iodi. 1500 units of tetanus antitoxin must be administered intramuscularly at least four hours before undertaking any cleansing or operative measure, as in fresh tissues opened up by operation the absorption of toxin by the perineural lymphatics is extremely rapid, and tetanus has been known to develop within 48 hours.

The effect of a prophylactic dose of antitetanic serum lasts only ten days. If, therefore, the wound remains unhealed, further injections (500 units) may be given subcutaneously at weekly intervals, in order to anticipate the total disappearance of antitoxin from the body, until three or four doses have been administered. With such small doses of serum given subcutaneously at any interval of time the risk of anaphylaxis is negligible. When operations are performed at the site of previously infected wounds, even if soundly healed, it is advisable to give a prophylactic injection of antitetanus serum two days before operation.

### *Early Diagnosis.*

Early diagnosis is of paramount importance. The classical symptoms described in text-books are those of a relatively late stage of the disease when specific treatment will have lost most of its value. The premonitory symptoms that at once should arouse suspicion are as follows:—

Sensation of stiffness in the posterior cervical muscles or in the jaws on opening the mouth widely; cramp or stiffness in the region of the wound; intense headache or backache; general restlessness, profuse sweating, and excessive yawning; sleeplessness, with anxious facial expression; hesitancy of micturition.

Early signs justifying a diagnosis of tetanus are:—

In the vicinity of the wound—muscular rigidity, painful cramps, or spasmodic muscular twitching (if the wound involves an arm or leg, the whole limb may show an occasional twitch). Difficulty or delay in swallowing or in opening the mouth, with increased tonicity on palpation of the masseters or muscles of the neck; increased rigidity of the facial muscles (spastic smile) and inability fully to protrude the tongue; increased reflex excitability—knee- and ankle-jerks, ankle-clonus, or slight muscular twitchings on pressure of the flexor tendons; difficulty in micturition; the occurrence of an occasional generalised spasm.

If any doubt exists it is far better to treat as tetanus; if the diagnosis is mistaken no harm will result.

### *Specific Treatment.*

As soon as the diagnosis is made, the first dose of antitetanic serum should be given intraspinally. Animal experiments and clinical observations have shown that intrathecal administration ensures the antitoxin being brought into the closest possible contact with the nervous tissues involved, and in the shortest space of time.

*Method.*—Lumbar puncture is performed in the usual way, a general anæsthetic being advisable. The quantity of cerebro-spinal fluid withdrawn should exceed by at least 8 c.cm. the volume of serum it is proposed to inject. Serum containing 16,000 to 20,000 units (U.S.A. standard), warmed to body temperature, is administered, either very slowly with a syringe or by the "gravity" method, from a small sterile funnel and tube. High-potency or "concentrated" antitetanic serum should be used (Messrs. Burroughs and Wellcome supply phials of 10,000 units of concentrated antitoxin contained in 10 c.cm. of serum, and the Lister Institute phials of 20,000 units in not more than 25 c.cm. of serum.) A total volume of 30–40 c.cm. of serum can be injected provided that more than this quantity of cerebro-spinal fluid has been evacuated. The foot of the bed is then raised for three hours in order to assist the upward flow of the serum. It is also advisable to supplement the intrathecal injection by giving 8000 units of antitoxin intramuscularly in order to combat any toxin that may still be circulating in the blood stream. Intravenous injections of antitetanic serum tend to cause anaphylaxis and not are advised. The initial intrathecal injection of serum usually gives rise by the following day to a certain degree of "aseptic meningitis." The cerebro-spinal fluid if withdrawn will be found slightly turbid, showing numerous clear and well-defined polymorphonuclear leucocytes. The temperature rises, and the patient may appear actually worse, showing symptoms of meningeal irritation—photophobia and increased muscular rigidity of the neck and limbs. In cases where the tetanus is yielding to treatment, however, these symptoms will disappear in a few days. On the second and third day of treatment both the intrathecal injection (16,000 units) and the intramuscular injection (8000 units) should be repeated. Following this, intramuscular injections only may be continued—8000 units on the fourth day and 4000 units on each of the fifth and sixth days. Subcutaneous doses of 2000 units are then given every other day until the symptoms have abated.

There is practically no limit to the total amount of serum that can be given; I have administered as much as 150,000 units to a single severe case recovering in the course of 18 days. A serum rash appears within seven to ten days of the first dose of serum in most cases, and occasionally facial herpes; as a rule these conditions require no special treatment.

### *General Treatment.*

The patient must be kept in bed in a darkened room with his back to the source of light, which is shaded. Absolute quiet is essential; even a slight noise will often provoke an exhausting painful spasm. Careful nursing is of the utmost importance, and the patient should be disturbed as little as possible. The temperature is taken in the axilla or groin, and when spasms tend to occur frequently, not at all. All dressings must be done quickly and deftly; laxatives given by the mouth are less disturbing than an enema. The nourishment should be fluid—milk and eggs, soup, beef-tea, brandy, &c.—and the patient spoon-fed. When trismus is pronounced, he is given liquid food through a straw or small rubber tube; nasal feeding should be avoided. For the painful spasms the best drug is chloretone given in 20-gr. doses three- or four-hourly; chloral (gr. 30 every four hours) is also useful and in tetanus superior to morphine; bromides are of little value. If the patient is unable to swallow, hyoscine (gr. 1/100) may be given hypodermically or chloretone (gr. 60) administered in solution per rectum; it may be necessary to resort to nutrient enemata, but their food value is very small. When spasms are frequent and severe, chloroform anæsthesia may be induced, especially if the respiratory muscles are affected.

Of other remedies that have been advocated there is no evidence that injections either of carbolic acid or of magnesium sulphate have any curative value.

### *Treatment of the Wound.*

The advisability of surgical measures directed to the wound when tetanus symptoms first make their appearance is doubtful. Some surgeons have advocated opening widely or excising the wound, and when a limb is involved, even amputation—in the hope of arresting the absorption of tetanus toxin. In my experience, surgical operations during the course of tetanus do far more harm than good, and probably, by opening up perineural lymphatics for the absorption of further tetanus toxin, even aggravate the disease. It is safer to abstain from surgical activity. The wound should be syringed gently every three or four hours with hydrogen peroxide. An open dressing consisting of a single layer of gauze soaked in the peroxide should be placed over it during the intervals.

### *Local, Delayed, and Recurrent Tetanus.*

*Local Tetanus.*—In those patients who have received one or more prophylactic doses of antitetanic serum tetanus may develop in a modified form confined to the vicinity of the wound. The symptoms may vary from mere local rigidity of the neighbouring muscles to a persistently tonic condition of a limb. Intermittent and spasmodic contractions may occur in the affected part. In all but the mildest cases, it is advisable to give an initial intrathecal injection (10,000 units) of antitoxin, followed by daily intramuscular injections of 8000 units until the condition subsides. The prognosis is good, but in a few untreated or inefficiently treated cases the tetanus becomes generalised.

*Delayed Tetanus.*—Tetanus may sometimes develop weeks after the original wound has healed, or the disease may follow some slight operative procedure and even a local injury. Recurrence of septic infection in a wound previously healed has also been known to be followed by tetanus. I have seen subacute generalised tetanus develop six months after a gunshot wound of the knee; the patient had received three prophylactic doses of antitoxin at weekly intervals following the wound and made a good recovery. The onset of delayed tetanus may be insidious and the condition may be general or remain localised. Trismus and neck rigidity has been known to remain slight for days and even weeks. As regards treatment, the principles detailed above should be applied according to whether the condition be general or local. The prognosis is good.

*Recurrent Tetanus.*—Occasionally in a patient who has previously suffered from tetanus as the result of a wound, tetanic symptoms may recur following an operation on the wounded area long after it has healed. The patient who has suffered from tetanus is never really out of danger while any foreign bodies or sequestra remain in the body. Tetanus bacilli have been cultivated from material removed from a wound as long as two and a half years after the injury. In cases of recurrent tetanus, as soon as the patient has recovered the wound should be excised and any foreign bodies and sequestra removed, cavities thus made being allowed to granulate up.

It is advisable before operating on a wounded area in a patient who has previously suffered from tetanus to give 15,000 units of tetanus antitoxin, after appropriate desensitisation, two days before operation.

### *Anaphylaxis.*

In all cases in which an interval of longer than ten days has elapsed since a previous injection of serum (including those who are likely to have received a dose of horse serum prior to the present illness), it is advisable to apply desensitising measures before giving a large dose of serum. Such anti-anaphylaxis is best induced by the method of Besredka and Friedberger.

6 c.cm. of the serum is diluted with 50 c.cm. of normal saline; 1 c.cm. of this mixture is injected intravenously; four minutes later this is followed by 3 c.cm. of the diluted serum, two minutes later by 10 c.cm., and after a further two minutes by 25 c.cm. Then in 15 minutes the full dose of serum may be given intrathecally, intramuscularly, or subcutaneously. The intravenous injections of the dilute desensitising serum can be given from a funnel and tube, the latter being pinched and liberated only to allow the required amount of diluted serum to escape into the vein.

Intrathecal injections are much less liable to be followed by anaphylaxis than are intravenous ones; the serum is not absorbed so quickly from the subarachnoid space into the general circulation as when injected directly into a vein. Through this slow absorption the patient probably becomes desensitised.

C. WORSTER-DROUGHT, M.D. Camb., M.R.C.P. Lond.,
Physician, West End Hospital for Diseases of the Nervous System; late Special Tetanus Officer (R.A.M.C.), Woolwich Military District.

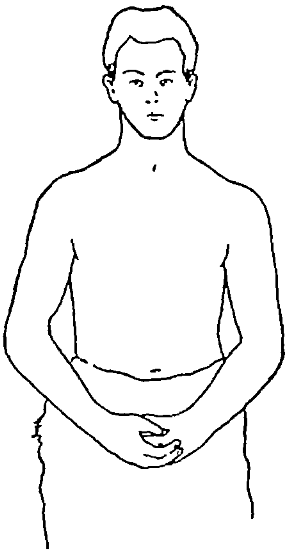
# Special Articles.

## THE IMPORTANCE OF CORRECT POSTURE IN TREATMENT BY IMMOBILISATION.

BY T. E. HAMMOND, F.R.C.S. ENG.,
ASSISTANT, SURGICAL UNIT, WELSH NATIONAL SCHOOL OF MEDICINE.

EVER since Hilton delivered his famous lectures on Rest and Pain, the placing at rest as far as possible of a diseased or injured organ has been regarded as a fundamental principle in treatment; if it is neglected, the best functional result is not attained. It often happens that a too zealous application of any form of therapy leads to its abuse, and treatment by rest is no exception. The prolonged rest of organs which are injured or whose nutrition is impaired does undoubtedly at times give rise to disastrous results. This was seen when fractures of the long bones were fixed by splints which were not removed until firm union had taken place.

FIG. 1.



The position of rest.

The resulting limitation of movement in neighbouring joints was out of proportion to the primary injury, and its degree was largely dependent on the duration of the immobilisation. The poor functional result was attributed to the prolonged rest. Consequently, there has been a recent tendency to decry its importance, and even to regard it as harmful. In the nerve lesions that were so common during the war, recovery of power was rarely seen in the muscles, in spite of perfect nerve surgery, until the teaching of Sir Robert Jones on the necessity for relaxing paralysed muscles was appreciated. By relaxation is meant the placing of a muscle at rest so that no strain is thrown upon it. When this line of treatment became popularised, the adhesions that sometimes developed were more marked than in the cases where it had not been carried out. Here again rest was condemned, but wrongly so, as adhesions did not form in cases where relaxation was properly applied.

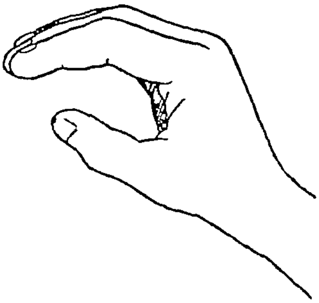
The true cause lay in failure to appreciate two essential principles. The first—with which I shall not here deal—is that complete rest is unnecessary after all inflammation has subsided or after repair has taken place, when activity, so graded that it is well within the capacity of the organ to perform and not of sufficient duration to induce fatigue, should be resumed. The second and more important is that, when one structure is placed at rest, no strain should be thrown upon any other. When an abnormal posture is taken up, the stretching of the muscles and ligaments leads to lengthening of the former and a constant strain upon the ligaments, which are inelastic. Paresis of the muscles follows, and a chronic irritation around the attachment of the ligaments that ends in an aseptic inflammation and the formation of adhesions. These are all the more marked if the nutrition of the limb is damaged or any septic process is present. T[illegible]irment of function becomes most evident in [illegible], where the slightest derangement interferes with accurate and finely coördinated movements. Consequently, the harmful effect of any line of treatment will be soonest appreciated here, and it is largely with the application of rest in the treatment of lesions of the hand that this article deals.

### *The Position of Rest.*

There is one position, the position of rest, in which all muscles, tendons, and ligaments are relaxed.

This position, which is assumed during ease and sleep, is that from which movement in any direction can be most easily started. Though varying with each individual, it approximates to a standard, and may for all practical purposes be described as follows.

FIG. 2.



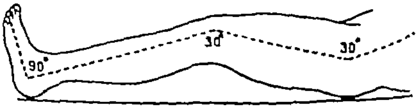
The hand in the position of rest.

In the erect attitude, when no accessory means of support is made use of, the forearm rests on the prominence formed by the great trochanter, which, by taking part of the weight, relieves the strain upon the muscles and ligaments. The upper arm is abducted 30° at the shoulder and is rotated inwards; the elbow is flexed to 120°; and the wrist is dorsiflexed 30° with the hand midway between pronation and supination. (Fig. 1.)

In the hand (Fig. 2) the fingers are flexed 30° at the metacarpo- and inter-phalangeal joints. The thumb is abducted 30° in a plane at right angles to the palm and is flexed 30° at both joints. Four main arches are present—a proximal and a distal transverse, and an inner and an outer longitudinal. The *proximal arch*, formed by both rows of the carpus and the bases of the metacarpals, has a dorsal convexity most prominent over the junction of the third metacarpal and the os magnum. The *distal arch*, formed by the heads of the metacarpals and most prominent over that of the third, is continued forwards to the tips of the fingers. With flattening of the latter arch the power of flexion of the fingers is lessened, with flattening of the former that of the thumb. The *outer arch*, formed by the outer portion of the carpus and thumb, arises at the scaphoid and passes forwards to the tip of the thumb. The *inner arch* is formed by the metacarpals and the phalanges of the fingers. The summit of both is over the heads of the metacarpals.

In the lower limb (Fig. 3) the hip is flexed 30° and is slightly abducted and everted, the knee is flexed 30°, and the ankle is dorsiflexed to a right angle.

FIG. 3.



The leg in the position of rest.

The position of rest is maintained to some extent by the ligaments and fasciæ, but chiefly by the postural tone of the muscles, the importance of which has been pointed out by Sir Charles Sherrington. It is sometimes stated that tonus is found only in the antigravity muscles. This is not the case, for, while it exists to a greater extent in these, it is also found in the opposing muscles. This is seen in lesions of the median and ulnar nerves, where, although the wasting of the muscles of the hand is partly responsible for the deformity, this is due chiefly to the unopposed tone of the extensor muscles and can be corrected by very slight force.

The position of rest can be maintained over long periods without the slightest discomfort or fatigue. This can be said of no other posture. Were the hand to be immobilised in this position for several weeks, there would be no discomfort, and on removal of the splint full and forcible contraction of the muscles could immediately take place, showing that no strain had been thrown on any structure. Any other posture could only be maintained either by contraction of the muscles or by passive force, being associated with hyper-relaxation of one group of muscles and ligaments and stretching of the opposing group. Extension of the fingers causes an ill-defined feeling of strain over the palmar surface that passes into the forearm when the wrist is dorsiflexed, and is relieved by taking up the position of rest. It is also felt to a lesser degree over the dorsum, when the wrist and fingers are flexed. Were the hand to be immobilised in either position for some weeks, a dull pain would be present, and after removal of the splint there would be a slight though temporary weakness due to continued tension on the muscles and ligaments.

The knee may be taken as an example of the larger joints. When immobilised in the fully extended position there is a feeling of discomfort over the back of the joint which passes off when it is slightly flexed. In the former case the knee has been *placed at rest*, in the latter in its *position of rest*, the essential difference being that while the latter included the former, it also means that no strain is thrown on any structure round the joint, a point of great importance. Those who have had to stay in bed for a long period will have learned to appreciate the ease that follows the placing of a pillow under the knees, which places the legs in their normal position of rest.

In 1916 my attention was first drawn to the importance of posture in treatment. When injured organs are kept in the position of rest, not only does any inflammation present show a greater tendency to subside, but adhesions are not so extensive and can be more easily broken down. The most intractable cases are those in which it is evident from the deformity present that, though treatment by rest had been carried out, treatment in the normal position of rest had not. In the case of the hand, for example, the fingers had been fully or even hyperextended, with flattening of the palm and obliteration of the arches. After fractures of the femur much limitation of movement is generally seen when the knee has been kept extended; whereas if about 30° of flexion have been allowed, full movement is often present.

It can, therefore, be laid down as an axiom that in all cases of injury or inflammation, when rest is advisable, the injured and neighbouring parts must be placed in their normal position of rest unless some definite contra-indication is present—*e.g.*, when, in fractures of the lower end of the humerus, the elbow has to be fully flexed. When a joint is involved in some inflammatory process, it becomes slightly flexed. This flexion increases later and so a definite deformity arises. In the early stages of all inflammations complete restoration of function should be the aim, which is best attained by keeping the joint in its position of rest. As the tendency is towards a flexion deformity, some have advocated that the joint should be held fully extended. I am certain, however, that such advice is wrong. When tuberculosis of the knee is treated with slight flexion, the inflammation tends to subside more quickly, abscesses are less likely to form, and the end-result is often good; when treated with full extension, the functional result is poor and complications are more common.

*The Position of Ankylosis.*

When it is obvious that destruction of the joint has taken place, limited movement is to be expected. In such cases the joint should be placed in the position that would give the best function should ankylosis occur. In the past there has been much controversy over the various positions that have been advocated. Yet it is quite easy to find out the optimum position by fixing one's own joints in plaster-of-Paris. In my opinion it generally corresponds to the position of rest.

Limited movement at a joint must necessarily give rise to some disability which will be partly compensated for by the increased movement that takes place in the neighbouring joints, especially if the patient is in early life. Recently I saw a pensioner, aged 25, who had a cross union between the ulna and radius of seven years' duration. He was unable to pronate or supinate the hand when the elbow was fixed. Yet when the latter was free, the rotation of the hand was almost equal to that seen in the normal adult, owing to the increased rotation acquired at the shoulder. The position of an ankylosed joint should throw as little strain as possible on the neighbouring joints, a point of much importance in the lower limb, where the constant strain is apt to set up an arthritis.

When the thumb and fingers are ankylosed in the position of rest, not only can objects be easily grasped, but the remaining digits can be readily opposed. Dorsiflexion to 30° is essential at the wrist, as full forcible contraction of the flexors can take place only in this position. The position of an elbow should depend largely on the occupation pursued. In the labouring classes flexion to 100° with the hand slightly pronated, and in women flexion to 75° with the hand slightly supinated, are probably best. When circumstances permit, it is well to fix the normal elbow in plaster for a short time, so that the patient can appreciate what is happening; full consideration should always be given to his views. Limited movement at the shoulder is partly compensated for by the movement of the scapula on the chest wall. When the shoulder is ankylosed with the arm abducted 60° and the elbow in front of the line of the body, the arm can be brought to the side, and abduction to 120° with a certain amount of flexion and extension are possible.

Since the lower extremity has to support the weight of the body, strength and stability are essential. Much time is, however, spent sitting down and at rest. When the hip is ankylosed in the position of rest, full extension and flexion to 70° may seem to be present. But this is only apparent and takes place through the movement of the spine. As a result, on standing the hip and neighbouring joints are in the position of rest; on walking the thigh can be brought into line with the body; on sitting moderate comfort is possible. When ankylosis takes place in full extension, as is sometimes recommended, sitting is most uncomfortable, and on standing there is constant strain upon the neighbouring articulations. The knee should be ankylosed flexed 30°, as this allows full movement at the ankle and hip on walking; when ankylosis takes place with full extension, dorsiflexion at the ankle is limited. The ankle should be ankylosed at a right angle, as the modern heel allows the knee and hip to be maintained in the position of rest on standing; and, as the whole of the sole of the foot is in contact with the boot, the weight is transmitted in the normal manner.

## PENSIONS FOR HOSPITAL OFFICERS AND NURSES.

### II.*

IN the preceding article the general outlines of the proposed scheme to provide pensions for hospital officers, including nurses, were given; we have now to come down to actual figures, dealing first with individual cases and finally with the total cost as it would affect the institutions.

Let us look first at the scheme from the point of view of an officer of the senior class, entering at age 20 upon hospital service, with a salary of £100 and emoluments of £30. At the outset he would pay £6 10s. a year out of his salary, and the hospital would pay £13 in his respect. It may be assumed for purpose of illustration that the officer's salary gradually rises by increments of £10 until he is receiving £200 a year at age 30—i.e., £230 in all at that point, and that thenceforward he enjoys his increases of £20 and, eventually, increases of £30, so that he reaches [illegible] in all by the time he is aged 50. We his annual contribution gradually rising pari passu with the salary to £39 a year, while the contribution of the hospital would gradually mount to £78 a year. As each addition to salary came into being, so would a new or increment policy be automatically effected. Even in the case of an Endowment Assurance, this would necessitate no medical examination after the initial one, and, of course, where the Deferred Annuity option was selected no examination would be necessary at any time, seeing that the option does not carry with it a death benefit in the way in which an Endowment Assurance does, for the amount paid at death really represents only the accumulated value of the payments which have been made.

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* Part I. appeared in THE LANCET last

Now, that initial annual payment of £19 10*s.* predicated here—viz., the £6 10*s.* from the officer and the £13 from the hospital—would provide for the hospital officer a Profit Endowment Assurance of £828, payable at age 60, or at previous death, with estimated Reversionary Bonuses gradually accruing and amounting at the end of the period to a further £558. As each increase in his salary throughout his service, carrying with it (as it would) the increased contributions, would gradually augment the amount insured and the accompanying bonuses, he would see the initial policy of £828 increased stage by stage to a total of £2689, and the ultimate bonuses standing added to the Policy at age 60 similarly increased to £1499. There would thus be a grand cash total at retirement of £4188, which sum would, if the pension option were selected, purchase an Annuity from age 60 of £354.

Under the foregoing Endowment Assurance option it must be clearly understood that the death benefit throughout the service is one of very considerable magnitude; to give an idea of its amount, if death occurred at age 35, there would be probably some £2000 payable to those whom he left behind him; if death occurred at age 40, the sum would be £700 or £800 more than that. If the officer, instead of selecting the Endowment Assurance option preferred to take that of the Deferred Annuity with return of premiums in the event of death, he would, if he lived out the full period, have amassed at the end of the time £5111, which would provide a pension of £441 10*s.* from the attainment of age 60 until death. In other words, by forgoing the valuable death benefits of the Endowment Assurance policy, and preferring a Deferred Annuity, a larger eventual pension is secured. This is, therefore, a better option for the man who is unmarried, or rather—an important proviso—for the man who is confident that he will remain unmarried throughout his service!

In a similarly typical case in the clerical or dispensing staff, where the salary and emoluments might run from £130 up to a limit of, say, £480 at age 50 or over, we have an initial sum of £6 10*s.* payable by the official and £13 payable by the hospital, gradually increasing as small additions are made, until at age 50 the contributions would be £23 10*s.* for the officer and £47 for the hospital; these would serve to produce an ultimate cash sum, represented by the Endowment Assurance policies and bonuses, of £3222, with a pension option of £272. The Deferred Annuity, while again giving far less if death occurred before pension age, would yield a cash sum of £4029 at maturity and so provide a correspondingly high pension.

As a third test we may take the case of a member of the nursing staff, beginning as a staff nurse with an average salary of £60 and emoluments of £50, passing through the stages of a ward sister with a salary gradually rising to £115, with emoluments of £60, and thereafter becoming a home sister, and eventually an assistant matron with a finishing salary at that stage of £220, with emoluments of £80. We may follow her career further, until, as a matron, she finishes with a salary at £300 and emoluments at £150. At the outset we will credit her with £20 to represent the accumulations made during her period of training, and will apply them in the form of [illegible] premium to increase the amount of her [illegible] taking this into account, and the fact that she begins by paying £5 6*s.* 8*d.* a year, where the hospital pays £10 13*s.* 4*d.*, her contributions gradually rising as she progresses until finally she is paying £22 10*s.* and the hospital £45; and we see that the result is that by age 55 there will be available a total sum of £1571 made up of the Endowment Assurance policies and bonuses, with a cash addition of £224 made up of the contributions paid during the few final years of service where the term is too short to admit of further increment policies under with profit Endowment Assurance tables, and thus bringing the total cash to £1795, which total in turn would provide an annuity of £118 6*s.* Here again the Deferred Annuity option would give a greater pension at the expense of lessened death benefits; for it would give an ultimate cash sum of £2036 instead of £1795. Moreover, in such a case as this illustration, choice would as a rule wisely fall upon the Deferred Annuity, for the woman's problem differs from that of the man unless she has others definitely dependent upon her. Indeed, nearly all nurses are likely to take Deferred Annuities since, for the rank and file, pensions to begin at age 55 are so expensive that the amounts will be none too great in any case.

### *The Cost to Hospitals.*

To get an idea of the cost of the scheme, if it were adopted as a whole, an example may be given of the figures as they would be applicable to a typical general hospital in the metropolis, containing between 500 and 600 occupied beds as an average. The number of employees within the limits of the scheme in such a case would be about 272, and the total salaries and emoluments £38,300, so that the hospital's annual contribution would be £3830. Taking as an instance a small institution, say, a special hospital with between 30 and 40 average occupied beds, we should find 22 employees within the scheme, with total salaries and emoluments of £3191, and an annual cost to the hospital of £319.

The memorandum, which was drawn up by King Edward's Hospital Fund for London and three other associations and circulated amongst the hospitals, points out that in the year 1924 there were 64 voluntary hospitals in London with surpluses altogether amounting to £280,000, and 54 hospitals with deficits amounting to £118,000, and certainly the statistics of the last five years do show that the number of hospitals with surpluses is steadily increasing and the number of those with deficits is steadily decreasing. There is, however, no burking the fact that, as we stand to-day, there are nearly as many hospitals with deficits as there are with surpluses, and no general statement that the hospitals, as a whole, are in an improved position is very comforting to those whose accounts are still upon the wrong side. It is true that in 1920, 1921, and 1922 the voluntary hospitals of London showed a net aggregate deficit for the year, first of £385,000, then of £214,000, and then of £177,000, whereas in 1923 there was a net aggregate surplus of £227,000, and in 1924 one of £162,000, from which the general improvement is evident, even though the 1924 figures indicate that improvement is not yet to be counted upon too exactly. The individual hospital, however, must cut its own coat according to its cloth.

One is compelled to come to the conclusion that for a very large number of hospitals the whole scheme in its entirety is an ideal which is at present beyond their powers, unless they are to be in some way very greatly assisted from outside sources. This, however, is not to say that it is impossible for them to make a beginning, and it would seem better to make that beginning from the top—that is to say, with the senior officers, matrons, and so on—rather than at the other end where you have the nursing probationers.

Looking at the figures with regard to the nursing class we find that a careful analysis has been made of 500 probationers who entered hospital for training between 1908 and 1914. Of these no less than 194 got married, 61 dropped out from death, ill-health, or from one cause and another, and only 245, less than half the total, went on with nursing work. Even of that number only 40 actually received hospital appointments, the rest obtaining appointments in such spheres as nursing homes or schools, or going into welfare work or missionary work, or the Army Nursing Services.

Such figures as these force a realisation that this large part of the scheme, involving as it would do an immense organisation and great difficulties with regard to the cost, both for the hospitals and the individuals, must really miss fire so far as more than half the persons embraced in this category are concerned. Those who frame such schemes as this are almost invariably attracted by the ideal of completeness, and always there is reluctance to admit that completeness is not possible; but, where the resources of a hospital are very limited, it is this end of the scheme that must be abandoned for the present as being the least effective use of the available money. To do something to place upon a safer footing the eventual provision for the old age of the senior officials, those who are giving their lives to hospital work and are the teachers of this branch of the profession, is something to effect which every possible strain must be borne.

With regard to the nursing profession, the view of one who comes from other spheres of work to the consideration of the matter is that the wages paid to women are too low. What are called emoluments in this connexion are simply such board and lodging as we all give in our homes to the ordinary domestic servant; but to domestic servants to-day we pay far higher wages than are paid to nurses working in the hospitals.

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# THE TUBERCULOSIS CONFERENCE,

## CAMBRIDGE, MARCH 25TH–27TH.

A JOINT conference of the Tuberculosis Society and the Society of Superintendents of Tuberculosis Institutions was held at Cambridge from March 25th to 27th.

The opening session was devoted to a discussion on

### *Ultra-violet Rays and Tuberculosis,*

introduced by a paper read by Dr. JAMES CROCKET, medical superintendent of Consumption Sanatoria, Scotland. Dr. Crocket gave a systematic account of the four groups of radiation known to have therapeutic properties, the lamps in general use, and the physiological and therapeutic effects of their action, the suitable and unsuitable types of case, and the general signs of intolerance. Contrary to the general opinion, he had not found ultra-violet radiation to be necessarily contra-indicated in pulmonary tuberculosis. With adequate precautions, especially with care to have the patient in the recumbent position and exposed to as little risk of fatigue as possible, improvement had been effected in 86 per cent. of cases as compared with 67 per cent. improvement by ordinary methods. Dr. Crocket stressed the point that ultra-violet radiation should never be allowed to become a substitute for the recognised hygienic treatment of tuberculosis. He also thought that it was high time we found a more comprehensive and accurate descriptive term than ultra-violet radiation and suggested phototherapy or electrotherapeutic radiation. In the discussion which followed the two most important points emphasised were those of immobilisation of the part and ventilation of the lamp room. Apparently it has been the practice in some institutions to remove the splintage from limbs during light treatment and thereby undo the good effects of immobilisation. Ventilation of the lamp room was considered a much-neglected point.—Dr. J. G. JOHNSTONE (Heatherwood) stated that in the course of visits paid to many institutions in Great Britain and on the continent he had found a great neglect of this all-important principle. Lamp rooms sometimes had no ventilation at all, and tuberculous patients were submitted to a temperature which produced a condition little short of heat-stroke. He considered that it was this overheating and lack of ventilation which was responsible for the recorded cases of hæmoptysis following light treatment. From the discussion it seemed clear that institutions installing a light plant must not in the future be satisfied with devoting some odd waste corner of the building to this object, but must make the same careful preparations as were necessary in building an operating theatre or other special department. The important and much neglected question of daily measurement of the ultra-violet rays and the various methods in use for this purpose seemed entirely to escape the notice of the conference. It would appear to be one of the next steps in getting really accurately controlled results of treatment.

Later in the afternoon Dr. G. MARSHALL, assistant physician to the tuberculosis department of Guy's Hospital, read a short paper on

### *Tuberculosis and Pregnancy,*

dealing with the subject from the point of view of the effect of the pregnancy on the tuberculosis. Of the cases of pulmonary disease referred to his department by the antenatal clinic at Guy's, Dr. Marshall had collected 13 non-tuberculous and 25 tuberculous cases, most of them occurring in the early months of pregnancy before the mechanical factor in causation was of much account. The majority of the tuberculous cases had been made worse by the pregnancy, and Dr. Marshall considered that modern opinion had reversed the old dictum that pregnancy was a good thing for the tuberculous girl. It seemed possible that there was a biochemical factor at work in these cases which was not yet understood. His opinion, in the light of the experience so far gained, was that wherever possible sterilisation of the patient should be effected, and where the pregnancy was terminated by Cæsarean section this was not difficult to do. In the subsequent discussion there was a general consensus of opinion that pregnant women reacted exceptionally well to sanatorium treatment, that labours were generally easy, and that in considering the future of the patient the ordinary rules of prognosis in tuberculosis must prevail. Cases were quoted by various speakers showing both the bright and the dark side of this clinical picture, and it was evident that personal experience of different types of case had led tuberculosis experts to hold divergent views on the subject. Probably this method of deduction from particular groups of cases contains an old fallacy—the difference in the economic and environmental factors in different groups of cases. Obviously the hospital out-patient class of woman is in a very disadvantageous position psychologically, economically, and environmentally, as compared with the middle-class woman or even with the agricultural labourer.

On the following morning the conference turned its attention to a consideration of

### *Catarrho-pyogenic Infections and Tuberculosis,*

the subject being introduced by Sir HUMPHRY ROLLESTON. The inter-relation of these two types of infection raised many difficult questions. The time relations of the two infections, the old "dualistic" conception of consumption of Virchow's day before the discovery of the tubercle bacillus, the delayed appearance of the tubercle bacillus in closed lesions all combined to make the problem a very thorny one, and the speaker thought it unwise to adopt Dr. Batty Shaw's appeal for a new nomenclature in the present state of our knowledge. Such a course might obscure the primary underlying factor of the disease.—Dr. BATTY SHAW continued the discussion. He based his argument on the well-known mortality curve for tuberculosis which showed a sharp rise in infancy, an equally sharp fall after 5 years of age, a flat low plateau until the age of 10, and then a gradual rise through the period of puberty, adolescence, and early adult life. In this second period of high mortality Dr. Batty Shaw considered that catarrho-pyogenic infection played a most important part, acting as a liberator of the tubercle bacillus. The latter did not, when unassociated with catarrho-pyogenic organisms, produce pus formation, caseation, and resultant hæmoptysis. The discussion which followed these two papers ranged over many different aspects of the subject and obviously no conclusion was possible. Most speakers agreed that the catarrho-pyogenic organisms had to be reckoned with as causative factors in tuberculosis, but exactly how and when they entered the field it was premature to decide. Most of the evidence produced was purely clinical and therefore of necessity incapable of being put to an accurate scientific test.

The rest of the session was given up to a paper by Sir **StClair Thomson** on the indications, technique, and results of

*Galvano-Cautery Treatment of Tuberculosis of the Larynx.*

He gave the results of 14 years' observation of cases of phthisis at Midhurst and recorded his figures as regards both incidence of laryngeal disease and galvano-cautery treatment. He insisted that a preliminary period of three months' observation was essential before local treatment of the larynx should be attempted. When this rule was observed the results were striking. Of all patients seen at Midhurst 17·5 per cent. showed laryngeal involvement, 16·6 per cent. of the latter proved suitable for galvano-cautery treatment, and of these again 64 per cent. showed arrest of the lesion after treatment.—In the discussion which followed Dr. R. R. **Trail** (Midhurst) emphasised the value of a laryngologist's report in prognosis of cases of pulmonary tuberculosis. As regards local cautery treatment, he believed the economic factor and the personality of the laryngologist were most important, the former because of the long preliminary period of observation in sanatorium which was necessary, the latter because the emotional excitement of the tuberculous patient who had to undergo cauterisation needed careful and reassuring handling.

At the afternoon session Prof. S. **Lyle Cummins** read a paper on

*Sanocrysin.*

He considered that rightly used the drug had some beneficial action. He discussed the various problems associated with its administration—viz.: (1) the effect of sanocrysin in liberating tubercle toxin, (2) the gold-ion toxicity of the drug, (3) the accessibility of the tuberculous lesion, (4) the resistance of the patient, and (5) the elimination of the drug from the body. Given a good general condition and a controllable temperature, Prof. Cummins thought the drug was definitely useful, but there were many cases where its use was contra-indicated. Radiograms were essential in interpreting its effects. Dosage was still in its experimental stage; in apyrexial cases he began with 0·25 g. and in pyrexial cases 0·2 g. Inman's classification based on the toxæmia factor was most useful in selecting cases. Prof. Cummins also described the technical details of administration, and stated that it was not uncommon for patients to be made worse for the first fortnight after treatment was instituted and then steadily to improve. Pyrexia, anorexia, giddiness, and even vomiting were not uncommon at first, but passed off. The really serious danger signals were (1) sudden reduction of urine, (2) stomatitis, (3) intestinal disturbance, (4) a tendency to sweating, and (5) persistent albuminuria.—Dr. F. G. **Heaf** described a series of cases he had treated with small doses beginning with 0·1 g., and stated that he believed the small dose method was the most useful.—The discussion on sanocrysin was very short, the conference evidently feeling that the data were too few for general discussion, and the session terminated with a demonstration by Dr. **Parry Morgan** of his special type of artificial pneumothorax apparatus.

The last session of the conference, on Saturday morning, was spent in considering artificial pneumothorax technique and apparatus. Various new t[illegible]paratus were described and end-results (especially in children), and the problems of gas embolism, pleural shock, &c., discussed.—There were also three short communications of very considerable interest from Mr. H. **Morriston Davies**, Dr. S. **Vere Pearson**, and Dr. L. S. T. **Burrell**.—Mr. **Morriston Davies** explained the use and value of phrenic nerve evulsion associated with artificial pneumothorax, by means of which the effect of collapse therapy could be supplemented by paralysing and thereby raising the diaphragm, and resting more efficiently the affected lung and rendering pleural effusion less liable to complicate matters. Dr. **Pearson** described the phenomenon of mediastinal bulging following collapse therapy. This was frequently found to be present when the patient received more gas at a refill than was anticipated, and on examination by radioscope the gas was found to compress the lung to a very small extent. In these cases there was frequently bulging in the posterior mediastinum, which could be seen on the fluorescent screen in the right oblique position, possibly associated with displacement of the middle mediastinum and sometimes, though not always, giving rise to undue dyspnœa. In this connexion it may be noted that the various phenomena and mediastinal movements were briefly described by Prof. Rist, of Paris, at a discussion at the Royal Society of Medicine a year ago. Dr. **Burrell** gave statistics showing the prevalence of pleural effusion in 309 cases in which he had induced artificial pneumothorax. In approximately 41 per cent. of cases this complication had been found to occur sooner or later. Various mechanical explanations had been brought forward to account for the complication, but Dr. Burrell thought that the cause was to be found in the reaction of the tuberculous foci in the lung and pleura, since effusion only rarely occurred in cases of collapse therapy performed for non-tuberculous disease of the lung.

# Public Health Services.

## TYPHUS FEVER IN ST. HELENS.

The case of typhus fever notified from Sunderland is the first to be brought to light since the small outbreak of this fever which occurred in St. Helens during August and September, 1924, and is described by Dr. Frank Hauxwell in a recent report. He reminds the health committee to which it is addressed that in 1875 typhus fever caused no less than 1500 deaths in England, that it is still prevalent in Eastern Europe, especially in Russia, and that "it is still not uncommon in Ireland." The previous outbreak reported in England was in Birkenhead in February to March, 1922, when there were 12 cases, three of which were fatal. The usual carrier of infection is the body louse, but fleas, bugs, and head lice also serve. Lice after absorbing infected blood retain their infectivity for three or four days, and should they lay eggs during this period the insects hatched from these eggs may transmit the infection. To how many generations this may be carried is, Dr. Hauxwell states, not yet known. The first St. Helens case was discovered on August 12th, when a girl of 14 was sent to the isolation hospital with the notification of measles. The symptoms suggested typhus and the diagnosis was confirmed by Dr. W. Hanna, medical officer of the Port of Liverpool. The girl died three days after admission. On further inquiry the father was found to be under treatment for influenza and to be an undoubted case of typhus. He was removed to the hospital and recovered. Another child from the same house had contracted an illness a month previously, for which she had been treated for pneumonia in the Providence Hospital, whence she was discharged cured on August 10th. An examination of her blood left no doubt that she had suffered from typhus, and was the first known case of the outbreak. The home of this family was not in bad condition structurally, but was verminous.

On August 25th another girl in this family took the illness and recovered. On the same day the mother became ill and died a fortnight later The other three cases were a sister-in law and her son and a contact The outbreak affected in all eight persons, of whom four died, and was confined to three households within 60 yards of one another One of the points noted was the reluctance of the contacts to admit feeling ill Thus the sister-in law said she was perfectly well until she had a temperature of 103° F, and was a well marked case She was removed to hospital the same day and died five days later It would appear, therefore, to be necessary to take the temperature of contacts and not trust to their expressions of well being No cause could be suggested for the outbreak, but the neighbourhood affected was one in which Irish visitors are not uncommon.

### THE FIRST SCHOOL MEDICAL REPORT

The annual reports of school doctors are (or ought to be) human documents, addressed to the lay public through their education and public health committees, showing the progress in the well being of school children deducing from past experience the road along which progress has been made, and outlining the route for further advance Each committee looks to its expert medical adviser for guidance in the direction in which further efforts should be concentrated, and honest doubt is arising whether the time spent over routine weighing and measuring of all children or on duplicated examination of teeth by doctors and dentists is time well spent Apart from remedial work, advance is to be seen in the rapid decline of personal uncleanliness and of dirt diseases associated with the modern tendency towards short hair, loose neckwear, and lighter and shorter clothing The year 1924 was noteworthy for the wide outlining of excellent schemes of betterment more open-air schools and classes were advocated, extensive preparations were being made for supervision of abnormal children, games, orthopædic and special centres were being planned, when Circular 1371 intervened and the surveyed road of advance will now require re-surveying before engineering can begin In the first report for 1925 which has reached us Dr A H G Burton, of Ilford, laments that his hope for an open air school has not been realised, nor that for a centre for mentally defective children, nor that of an orthopædic centre for treating the 311 children requiring such attention In Ilford there are 185 pre-tuberculous children for whom no special provision is made, yet the high cost to the country of treating the case of developed tubercle compares badly with that of preventive open air classes and schools. It takes long for economists to appreciate that prevention is the cheaper and sounder method. Credit is due to Dr Burton not only for his early report, but for the excellence of the results shown in his routine work.

### MENTAL HOSPITAL REPORTS

THE *Royal Albert Institution for the Feeble Minded*, instituted in 1864 for the benefit of the feeble-minded of the Northern Counties, has issued its sixty first annual report, which was approved by a general meeting held at the Town Hall, Rochdale At a public meeting held the same evening Lord Richard Cavendish stressed the voluntary basis of the Institution and the care devoted to the teaching and training of the inmates as well as to their occupation and amusement Since 1870 1386 patients of both sexes have been admitted, of whom 10 per cent. have become practically self-supporting under friendly supervison Scarcely any case leaves the Institution unimproved Accommodation has now been provided for 800 patients in the main building and its dependencies. Employment on the estate and farmlands of 277 acres provides healthy occupation and there is a dairy farm and farm colony for 10 youths who work on the land or tend cows, pigs and poultry Industries and handicrafts are carried on in a system of workshops. The girls assist in a variety of domestic occupations. Dr W H Coupland's eleventh medical report mentions a total of 798 patients, 536 males and 262 females. Fifty new patients were admitted during the year and 83 cases discharged, while 27 (15 males and 12 females) had died This exceptionally high death rate followed an exceptionally low one in the previous year, the average mortality of the past 25 years not having exceeded 2·55 per cent of residents An epidemic of influenza had involved 240 patients and 16 of the indoor staff, amongst whom was a charge nurse who died. Besides influenza, outbreaks of German measles, measles, chicken pox, and whooping-cough had seriously hampered the special training arrangements of Miss Gresham and her staff of teachers. The open air school recently added had proved valuable The useful work done in this Institution continues to retain the benevolent interest of the northern public

The 113th annual report of the *Royal Hospital at Morningside, Edinburgh*, records a successful year of work in 1925 on an average of 830 resident patients drawn from all classes of the community and including a high percentage of voluntary boarders In addition to the four nursing homes in the suburbs for the use of patients under their own medical attendants each adapted to its special type of case, a convalescent home in the country is to be opened this year A mental out-patient clinic at the Royal Infirmary is to be opened this month to investigate and advise on all sorts of difficulties and complaints in which mental instability or weakness is believed to play a part. Here the ideal of prevention will be aimed at Possibly to be run in conjunction with this clinic, which will have no infirmary beds at its disposal the managers hope to open a "Jordan Burn Hospital" to provide for about 48 cases of early and mild forms of mental trouble among the hospital patient class A public appeal is to be made for funds to finance this extremely desirable institution

The *Aberdeen Royal Mental Hospital* has about 800 certified patients and 80 voluntary boarders The recovery rate for 1925 was 27·7 per cent. and the death rate 6·88 per cent. No more cases of typhoid occurred, and the extensive search for a carrier responsible for the 1924 cases met with no success A visiting dental surgeon was appointed during the year and an occupational therapy department was opened A graduate of the College of Occupational Therapy in Philadelphia was appointed instructress and the department appealed at once to a large number of patients The medical superintendent remarks that "it was most instructive to observe the gradual development of interest in some melancholic and demented patients" The work includes the making of rugs, raffia and cane-baskets, teapot stands, trays, toys, and needlework, designing, painting, block printing, leather and metal work The success of the venture is indisputable

### INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 20TH 1926

*Notifications.*—The following cases of infectious disease were notified during the week:—Small-pox, 189 (last week 312); scarlet fever 1644; diphtheria 1115; enteric fever 51; pneumonia 1142; puerperal fever 63, cerebro-spinal fever, 9; acute poliomyelitis 4; encephalitis lethargica 15; typhus fever 1; dysentery 5; ophthalmia neonatorum 105 No cases of cholera or plague were notified during the week

The case of typhus fever was notified from the county borough of Sunderland. Dr E Thorp, deputy medical officer of health for the borough, informs us that the source of infection has not yet been definitely ascertained The victim was a child of 3 years of age, and it is interesting to note that a woman in the same house died of pneumonia and meningitis a month previously, the crisis being on the twelfth day

*Deaths.*—In the aggregate of great towns including London there were 3 (0) deaths from enteric fever none from small pox 110 (36) from measles 12 (2) from scarlet fever 17 (1) from whooping-cough 19 (17) from diphtheria, 63 (22) from diarrhœa and enteritis under 2 years and 136 (10) from influenza. The figures in parentheses are those for London itself. The notified deaths from influenza are higher than in any previous week of the year

# Correspondence.

"Audi alteram partem."

## A STATE MEDICAL SERVICE.

*To the Editor of* THE LANCET.

SIR,—A principal recommendation of the recent report of the Royal Commission on National Health Insurance was quoted in THE LANCET last week as follows: "The ultimate solution will lie, we think, in the direction of divorcing the medical service entirely from the insurance system, and recognising it, along with all the other public health activities, as a service to be supported from the general public funds." The view of the Commissioners will surprise those who have thought the question of nationalisation was moribund.

A fugitive interest was aroused in it, when within half an hour on a recent morning a youngish consultant and a retail chemist both expressed the opinion that State conduct of their respective professions must eventually come, and the sooner the better. I met the chemist again in the evening and found the imminence of a State service to be then appreciably less. Business was better, and a comparison of receipts as from Jan. 1st had revealed an unsuspected surplus of £47 over last year.

It has long been recognised as a weakness of democracy that whereas in theory the majority rule and order the manner of their existence, in practice compactly organised and sufficiently vocal minorities often impose their will upon the inarticulate mass. Ephemeral difficulties or even the personal embarrassments of the moment are not infrequently at the root of the unreflective advocacy of far-reaching social experiments which hold the promise of a material reward. This is an attitude we can readily understand and, up to a point, even sympathise with. To the majority of mankind material advancement is the most cherished good. But the public advocacy of a State Medical Service is never based upon grounds of self-interest, for social reformers are invariably altruists who live and move in a rarefied atmosphere of spirituality and are concerned only for the welfare of others. The private practice of a profession is quite properly categoried amongst the precarious livelihoods. Actually it is no more speculative than the conduct of a trading enterprise, where equally there must be a high percentage of failure or indifferent success. It is precisely the sporting or speculative character of a competitive undertaking which constitutes not a little of its lure for the energetic and capable; and the efficient speculator is never poor.

To function successfully a State service would require to substitute something for the competitive interest and the desire for realisation which spur the individual practitioner to greater effort. In short, it must contemplate the enrolment of idealists to whom the pursuit of knowledge and truth is in itself an end, and the reward of industry the consciousness of well-doing. The supply of genuine idealists being restricted, the service as constituted would presumably embrace a certain number of idealists together with a much larger number of scientists whose conception of the greatest good is a safe and pensionable £600, an eight-hour day, and a semi-detached suburban villa called "Chez Nous." The actual factor, however, which determines the advent or otherwise of a State Medical Service is economic. The proponents of such a service manifestly accept the perpetuation of inadequate industrial wages and low purchasing power, for in the presence of the reverse conditions it has no status. It is generally believed that commodity prices will become stabilised at about 140, a figure now reached, but wages, monetary and real, cannot remain at present levels if the country is to return to prosperity, as it unquestionably will. Both employers and the responsible Labour leaders recognise that under prevailing world conditions high wages are the [illegible]tant of high productivity, which alone enables manufactured articles to be sold at competitive prices. With the stabilisation of piece-work rates, the use of modern plant, and the removal of hampering trade-union restrictions the skilled mechanic within ten years will be earning £10 weekly and ordinary labour probably a pound a day. This will involve a considerable decrease rather than an increase of present State medical commitments.

History shows that periods of individualism regularly alternate with periods of socialism, each representing a reaction from extreme positions reached by the opposing humanistic theory. In 1920 many believed that a State Medical Service was at least within the bounds of possibility. This phase passed, leaving behind an unwelcome legacy of social services and salaried posts. We are now at the beginning of a period of intense and hopeful individualism.

I am, Sir, yours faithfully,
H. D. L. SPENCE.

Great Russell-street, W.C., March 29th, 1926.

## WHAT IS ORTHOPÆDIC SURGERY?

*To the Editor of* THE LANCET.

SIR,—A perusal of the February Transactions of the Orthopædic Section of the Royal Society of Medicine prompts me to ask through your columns the question: "What is orthopædic surgery?"

The cases shown in the Section included two of Charcot's disease, one of osteomalacia, and one of secondary ovarian sarcoma of the scapula, treated by inter-scapulo-thoracic amputation. The first three cases possess only a minor and incidental orthopædic interest and the last one, so far as I can see, none at all. We have travelled far from the time when orthopædic surgery was defined as the branch of surgery which deals with the deformities arising during the process of growth, and the subject still appears to be expanding indefinitely.

The recognition of a specialty in surgery is the result of an implied bargain, made in the public interest. On the one hand, the general surgeon acknowledges the superior knowledge of the specialist based upon long and exclusive devotion in hospital practice to his particular subject. The specialist on his side agrees to restrict his activities within the limits of his specialty. In cases such as those referred to I do not think orthopædic surgeons possess any special knowledge or experience. I doubt, in fact, whether their experience in such fields is equal to that of the general surgeon, and it appears to me that such cases should not be shown in a specialist Section of the Royal Society, but before the main Surgical Section, where they could be considered from a broad point of view, and in all their aspects.

When cases are shown publicly in a specialist Section, there is a clearly implied claim to superior skill and knowledge in their treatment. Cases in which this claim cannot be substantiated should be excluded. Alternatively, I think the Orthopædic Section should apply for absorption in the main Surgical Section of the Society.

I am, Sir, yours faithfully,
W. SAMPSON HANDLEY.

Harley-street, W., March 23rd, 1926.

## AN ESSAY IN EXPERIMENTAL EPIDEMIOLOGY.

*To the Editor of* THE LANCET.

SIR,—May I make one comment on the leading article which appears under the above heading in last week's issue of THE LANCET? In my first Milroy Lecture I said: "Many of the results which I wish to lay before you are . . . . the outcome of a joint investigation, for which Dr. Greenwood and I are equally responsible." If I may be allowed two other quotations from the same lecture, they will, I think, make clear the position as it appears to us both.

"It is not enough that the statistician should analyse the results obtained by the bacteriologist. He must take a full share in designing the experiments and in following their course."

"At the present moment, we believe that the best hope of elucidating the main questions at issue is to combine the experimental and statistical methods, by developing an experimental biometry of epidemic disease, in which the bacteriological and immunological factors shall not be so complex, and so little susceptible to control, as to defy analysis, while the numerical data shall not be so slight *as to preclude the application of statistical methods of inquiry.*"

Dr. M. Greenwood's share in the work is, of course, perfectly obvious from the context of the lectures, and I would not trouble you in the matter were it not that I have a very lively faith in the promises held out by a closer coöperation between the two methods of research. Team-work is not a magician's wand, potent to resolve all our troubles and perplexities; indeed, it can quite easily be overpraised and overdone. But from time to time occasions arise in which it becomes clear that successful attack on a particular problem requires the application of two technical methods, neither of which can be acquired easily or quickly, and which are not, in fact, at the disposal of a single individual; while two or more persons, possessing in their joint capacity a combination of technical experience which neither can command alone, may have a sufficient common stock of knowledge and ideas to see the same problem in much the same light. Under such circumstances team-work becomes natural, and therefore easy and profitable. There is, I think, little doubt that the study of epidemic disease offers one such occasion to the bacteriologist and the biometrician. I shrewdly suspect that many of the problems of infection and immunity, not usually included in the domain of epidemiology, would yield to attack along similar lines.

I am, Sir, *yours faithfully,*

Manchester, March 20th, 1926. W. W. C. TOPLEY.

next door, and would be able to enlarge their special departments in the near future.

Experience gained in maternity and child welfare work and the reduction of deaths from infantile diarrhœa clearly show that most benefit accrues where facilities for knowledge and treatment are easily available, and although it may not be possible to increase the number of venereal disease clinics at the present time, it is surely a retrograde policy to close any of them. The scheme of six large all-day clinics will, I fear, prove both more expensive and less efficient.

I am, Sir, yours faithfully,

STELLA CHURCHILL.

Chiswick, W., March 23rd, 1926.

direct loss to him, either in money or in time. This loss should be made up by a small grant from the mother hospital.

Your readers are more competent to appreciate or to criticise these observations than I am, being a layman. But all of us, medical or lay, who regard our hospitals as the places where disease is to be searched out and fought, must welcome any suggestion which is intended to increase the hospital's power as a fighting force, and is intended to ensure that all hospital men, whether their duties lie within or without the hospital walls, shall always be members of that force. Now, when a man leaves the hospital in which he has worked for years as student and houseman, the sting of the "Good-bye" is that he feels he is dropping out and has no further part in the great adventure.—I am, Sir, yours faithfully,

E. W. MORRIS,
House Governor.

London Hospital, Whitechapel, E., March 26th, 1926.

## A COMPENSATION PROBLEM.

*To the Editor of* THE LANCET.

SIR,—The following sequence of events in a male patient, aged 57, is of some interest.

The patient, X. Y. Z., sustained an accident to his back at the steel works by falling off a large mould on to the edge of a stage. There was much bruising to the muscles of the lumbar region, but no fracture or internal injury could be found. Four weeks later he complained of pain in the left groin and on examination a testicular tumour was found. This was removed 18 months after and found to be a rare tumour of the left testis of early malignancy. Four days after removal of the testis the patient complained of pain in the right iliac fossa and other symptoms of appendicitis. He was removed to hospital and the appendix was found inflamed with an early abscess forming. He made an uneventful recovery.

In view of the possible claim for compensation that may be made in this case I should be glad to hear any views of your readers on the possibility of either the testicular tumour or the inflamed appendix having developed as a sequel of the accident.

I am, Sir, yours faithfully,

March 23rd, 1926. PRACTITIONER.

# The Services.

### ROYAL ARMY MEDICAL CORPS.

Lt.-Cols. P. H. Falkner and S. M. A. Curran retire on retd. pay.

Maj. and Bt. Lt.-Col. J. A. Anderson retires on retd. pay and is granted the rank of Lt.-Col.

### ARMY RESERVE OF OFFICERS.

Lt.-Col. C. Clarke to be Maj. whilst empld. under Art. 505 (*b*), Royal Warrant for Pay and Promotion, 1922, and relinquishes the rank of Lt.-Col.

### TERRITORIAL ARMY.

Capt. S. McNaughton resigns his commn. and retains his rank.

Lt. P. Hickey to be Capt.

Capt. H. V. Forster (late R.A.M.C.) to be Lt. and relinquishes the rank of Capt.

### ROYAL AIR FORCE.

Flying Officer R. L. C. Fisher is granted a permanent commission in this rank.

M. J. Marren is granted a short service commission as a Flying Officer, for three years on the active list.

ST. MARY'S HOSPITAL POUND DAY.—As a result of the first Pound Day organised for the benefit of this hospital, which was held on March 18th, the sum of £600 was realised in money, and the groceries contributed amounted to more than a

# Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: ELECTION OF PRESIDENT.—An extraordinary Comitia of the College was held on Monday, March 29th, at 5 P.M., the President, Sir Humphry Rolleston, Bart., being in the chair. The President delivered the annual address, much abbreviated in delivery because of the large amount of business before the Comitia. Reference was made to the changes made during the past year in the examination for the membership. Brief obituary appreciations were read of the nine Fellows who had died during the year, including Dr. Howard Tooth, Sir Richard Douglas Powell, Dr. Edward G. Browne, Dr. J. W. Russell, and Dr. G. H. Hunt.

A vote of thanks to the retiring President having been moved and carried, the College proceeded to the election of President. At the first ballot Sir John Rose Bradford received 51 votes, Lord Dawson 37, Sir William Hale-White 19, Dr. Raymond Crawfurd 14, and Dr. John Fawcett 11. The first two of these names were then submitted to a further ballot, when Sir John Rose Bradford received 81 votes and Lord Dawson 65. Sir John Rose Bradford was then inducted to the President's chair.

Dr. R. O. Moon was elected Assistant Registrar, having been nominated by the President at the last meeting of the Comitia, and Dr. J. Walter Carr was elected a representative of the College on the "Professional Classes Aid Council" in place of Dr. Newton Pitt, retired.

In reply to a letter received from the Royal Society, asking the College to appoint a representative to attend a meeting in the Society's rooms on April 30th, for the purpose of organising a celebration of the centenary of the birth of Lord Lister (April 5th, 1927), the President was appointed to represent the College.

Diplomas were granted in tropical medicine to 27 candidates.

Lord Dawson drew attention to the discontinuance of the publication of "Medical Science Abstracts and Reviews." The College affirmed its appreciation of the value of this publication, and hope was expressed that the Medical Research Council would resume it.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B. AND CH.B.

*Part I.*—T. Blezard, H. C. Calvey, F. R. Craddock, L. de Jongh, Lilian W. Edwards, E. E. Glenton, L. S. Goldman, A. W. Green, H. E. Hughes-Davies, Edna Morris, T. C. Newman; Muriel S. Roberts, J. B. Rushton, E. F. Thompson, J. L. Walker, A. J. Walsh, and Joan Watkins.

*Part II.*—L. de Jongh, T. Lotter, Ivy H. Rowlands, and J. L. A. Webster.

DIPLOMA IN TROPICAL MEDICINE.

W. J. Aitken, A. Ashworth, R. N. Bansikar; N. Bligh-Peacock, Effie G. Bolton, E. H. Boodrie, M. A. B. Brito-Mutunayagam, T. Cullen, H. N. Davies, B. G. V. Dias, E. G. A. Don, H. P. Fowler, Isabella J. Fowler, Katharine M. Hodgkinson, R. Jackson, K. H. Kamakaka, D. Lennox; A. W. Lewis, A. G. Mackay, N. McLean, M. MacSweeney, S. B. Malik, M. E. Merchant, E. F. Molony, S. G. Nashikkar, F. Oppenheimer, F. S. Paterson, L. D. Quigley, M. Rodrigues, A. S. Sachdev, B. Singh, J. Singh, S. A. Talib, C. L. Tan, Catharine F. Taylor, N. S. Turnbull, B. K. Vardya, and T. N. Varma.

DIPLOMA IN TROPICAL HYGIENE.

G. Clark, Ivy Collier, B. L. Davis, A. J. Hawe, D. M. Mackay, and D. A. Skan.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

J. H. Barrett, R. Hermon, J. M. Hosey, Irene E. Kenworthy, H. McE. Morris, and D. Ramage.

UNIVERSITY OF EDINBURGH.—At the Graduation Ceremonial recently the following degrees were conferred:—

DOCTOR OF SCIENCE.

Ronald Gray Gordon, M.D.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Roderick Macdonald.

It is announced that at the bicentenary celebrations of the Faculty of Medicine in June the degree of Doctor of Laws will be conferred on the following: Dr. A. Balfour, Director of the London School of Hygiene and Tropical Medicine; Dr. R. Howden, Professor of Anatomy, University of Durham; Sir George Newman, Chief Medical Officer of the Ministry of Health; Mr. Alexander Primrose, Professor of Clinical Surgery, University of Toronto; Sir John Robertson, Professor of Public Health, University of Birmingham; Dr. Ralph Stockman, Professor of Materia Medica and Therapeutics, University of Glasgow; Mr. A. L. Turner, President of the Royal College of Surgeons, Edinburgh; Sir Norman Walker, formerly Senior Lecturer on Diseases of the Skin, Edinburgh; and Mr. J. T. Wilson, Professor of Anatomy, University of Cambridge.

University of Durham.—In examinations held recently the following candidates satisfied the examiners:—

*Third M.B.—Pathology and Bacteriology, Materia Medica, Pharmacology and Pharmacy, Public Health, and Medical Jurisprudence.*—Samuel Carnotsky, Clarence D. C. Golding, Satyen Mozumder, Robert W. Rutherford, and Thomas A. W. Wilson.

University of Oxford.—Robert James Brocklehurst, B.M., University College and St. Bartholomew's Hospital, has been elected to a Radcliffe Travelling Fellowship of £300 for two years. Bernard Thomas Squires, student of medicine, University College, has been elected to a Christopher Welch Research Scholarship of £100 for four years.

Royal Institution.—The after-Easter lectures at the Royal Institution will begin on Tuesday, April 13th, at 5.15 P.M., when Prof. J. Barcroft will deliver a lecture on the Salivary Glands, which will be the first of four lectures by him on Organs of Multiple Function.

London University: Bloomsbury Site.—In a letter to the Treasury dated March 24th, 1926, the Vice-Chancellor of the University expresses the Senate's hope that the Treasury will still take such steps as are now practicable to secure the retention of as large a part as possible of the Bloomsbury site for University purposes, and announces the appointment of a deputation to confer with the Government on the general situation This deputation consists of the official members, Sir William Beveridge, Sir William Collins, Prof. Filon, Dr. Graham Little, Sir Josiah Stamp, and Sir Holburt Waring.

National Association for the Prevention of Tuberculosis.—The twelfth annual conference is to be held at Glasgow from July 1st to 3rd. Discussions will deal with the Provision for the Care of Non-Pulmonary Forms of Tuberculosis (opened by Dr. A. S. M. Macgregor and Mr. James Taylor), and the Actual Place and Function of the Tuberculosis Dispensary in the Tuberculosis Scheme (Sir Robert Philip and Dr. Lissant Cox). There will also be communications dealing with recent advances in tuberculosis by a number of authorities, and institutions in the neighbourhood will be visited. The conference is open to all persons interested in tuberculosis on paying a fee of one guinea. Particulars of reduced railway fares and the like may be had from the secretary at 20, Hanover-square, London, W. 1.

Balneological Congress at Aix-la-Chapelle.—The forty-first congress of the German Balneological Society is being held this year at Bad Aachen (Aix-la-Chapelle) from Tuesday, April 6th, to Sunday, April 11th, under the presidency of Prof. Dietrich. Wednesday opens with an introductory address by Prof. H. Strauss, of Berlin, on the Origin and Differential Diagnosis of Chronic Arthritis, and the forenoons of that and the next three days will be occupied by the reading of more than 60 papers dealing with many aspects of gout, rheumatism, and fibrositis, and the effect of various baths on these and other systemic affections. Demonstrations of various kinds will be given in the afternoons by local balneologists and members of the society from Wiesbaden, Nauheim, Pistany, Wildbad, Marienbad, and other continental spas. Saturday afternoon and Sunday will be given up to excursions in the Rhineland. Information may be obtained from Dr. Max Hirsch, Berlin-Charlottenburg, Fraunhofer Strasse 16.

Fellowship of Medicine and Post-Graduate Medical Association.—On Thursday, April 15th, at 3 P.M., Mr. W. E. Tanner will give a demonstration in clinical surgery at the Prince of Wales's General Hospital, Tottenham. This demonstration will be free to members and to general course ticket holders of the Fellowship.—From April 19th to May 1st the Bolingbroke Hospital, Wandsworth Common, will hold an intensive course in medicine, surgery, and the specialities.—During May there will be two courses lasting the entire month—on Psychological Medicine at the Maudsley Hospital, Denmark Hill, and on Venereal Diseases at the London Lock Hospital. This latter hospital will hold the clinical course irrespective of numbers, but the lectures will only be given if there is a minimum entry of eight.—From May 3rd to 22nd there will be a clinical and an operative course at the Central London Throat, Nose and Ear Hospital.—The Royal Waterloo Hospital will hold a course in medicine, surgery, and gynæcology from May 3rd to 22nd, with opportunities for attendance in the departments of the hospital.—From May 3rd to 15th the Infants Hospital will hold an afternoon course under the direction of Dr. Eric Pritchard, and a three weeks' course in ophthalmology will be given by the Royal Westminster Ophthalmic Hospital from May 3rd to 22nd.—Copies of all syllabuses, of the general course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Manchester Poor-law Patients. — The Manchester Board of Guardians have approved of a scheme whereby the Poor-law sick patients will receive the same treatment as panel patients. Hitherto Manchester Poor-law doctors have had to provide the medicine for the patients. The new arrangement provides for all prescriptions to be made up by the chemists.

College of Nursing.—From Thursday, April 8th to 15th, there is to be a post-graduate course at the College, arranged by the Public Health Section. Amongst those who will give lectures are Dr. Eric Pritchard, Dr. Letitia Fairfield, Sir Henry Gauvain, Sir John Robertson, Dr. W. F. Whitley, Mr. Sampson Handley, Dr. C. P. Symonds, Dr. James Wheatley, Prof. Louise McIlroy, and Dr. Margaret Rorke. Particulars may be had from Miss Hester Viney, College of Nursing, Henrietta-street, London, W. 1.

Messrs. J. and A. Churchill expect shortly to publish "The Chemistry of the Proteins," by Dr. Dorothy Jordan Lloyd; "Recent Advances in Biochemistry," by Dr. John Pryde; the fourth edition of Sir Maurice Craig's "Psychological Medicine," in which Dr. Thomas Beaton has collaborated; the second edition of Dr. M. Dobbie's translation of Arvedson's "Medical Gymnastics and Massage in General Practice"; and a small book called "Ophthalmic Nursing," by Mr. Maurice Whiting.

Training and Appointment of Health Visitors. Ministry of Health Circular 680 (H.M. Stationery Office, 1*d.*) contains the information that the Minister has approved the Royal Sanitary Institute as the central examining body to conduct examinations for health visitors and to issue health visitors' certificates. On and after April 1st, 1928, the Minister will not approve the appointment of a woman for the first time as a whole-time officer of a local authority with health visiting duties unless she has obtained this certificate, or the diploma issued to students who, before April 1st, 1925, began an approved course of training under the regulations of 1919. The position of existing health visitors is safeguarded, but it is considered desirable that women who have given at least five years' satisfactory service as whole-time health visitors should endeavour to obtain the new certificate. As from Jan. 1st, 1928, the approval given by the Local Government Board under the Health Visitors (London) Order, 1909, to the certificates for health visitors of the Royal Sanitary Institute, the Royal Institute of Public Health, the National Health Society, and the Battersea Polytechnic is withdrawn.

Cremation Society of England.—The annual meeting of this society was held at 12, Stratford-place, London, W., on March 24th, when Dr. P. Chalmers Mitchell, Chairman of the Council, presided. On the adoption of the report, the Chairman expressed gratification at the progress made during 1925. The number of cremations in Great Britain had increased, especially in the London area. With the existing cry for building sites, playing fields, and open spaces, he said it was extraordinary that it was not more fully realised how much space was needlessly wasted in cemeteries. Cemeteries were expensive to keep up and invariably showed a loss, whereas crematoria showed a profit, and would show more profit if developed on a larger scale. The number of cremations at the 16 British crematoria during the year was 2701, showing an increase of 800 as compared with the figures of 1924. Of the total for 1925, 1533 cremations were carried out at the four crematoria in Greater London—viz., Golders Green, Ilford, Norwood, and Hendon Park. The Duke of Bedford was re-elected President of the society.

A Visit to Czecho-Slovakia.—As already announced the International Society of Medical Hydrology is this year holding its annual meeting in Czecho-Slovakia from April 15th to 22nd, and has issued an invitation to members of the medical profession to join in the conference and tour which have been arranged. The places to be visited are Karlsbad, Marienbad, Franzensbad, Prague, Pistany, and the spas of the Tatra mountains, and the society and its friends will be the guests of the Czecho-Slovakian Government and of the spa municipalities during their seven days' stay in Czecho-Slovakia. The arrangements include an official reception at Prague on April 19th, and a special conference on rheumatism at Pistany, in which Sir William Willcox (London), Dr. Kahlmeter (Stockholm), Dr. van Breemen (Amsterdam), Prof. A. Strasser (Vienna), Prof. M. Netousek (Bratislava), Dr. Baltaceanu (Budapest), and others will take part. A limited number of applications to join the tour can still be entertained. They must reach the hon. secretary, at 30, Devonshire-place, London, W. 1, at latest by the first post on Monday, April 5th. The total expenses of the visit, including fares to Czecho-Slovakia at special rates, are estimated at about £15. Visitors from England will leave London on Wednesday, April 14th, at 9.15 A.M.

**Royal Sanitary Institute.**—A sessional meeting will be held in the Town Hall, Weston-super-Mare, on Friday, April 9th, at 11 A.M., when there will be a discussion on the Rôle of Different Agencies in the Improvement of the Milk Supply. Amongst those who will take part will be the hon. local secretary, Dr. W. G. Savage. Those who intend to be there should notify him at the County Health Department, Boulevard, Weston-super-Mare, not later than April 5th.

**The late Prof. Jonnesco.**—Prof. Thomas Jonnesco, who died on March 28th at Bucharest at the age of 66, was well known in this country and elsewhere for his work on the excision of the cervical sympathetic. He studied in Paris and was at one time prosector in the Faculty of Medicine, returning later to Bucharest as professor. He was a brother of the late Mr. Take Jonnesco.

**Optical Dispensing.**—A deputation from the Joint Council of Qualified Opticians and the British Optical Association was received by the Minister of Health on March 26th and discussed with him the Bill to secure the registration of optical practitioners and to regulate the practice of Sight Testing and Optical Dispensing, which has been presented to Parliament by a private Member. Mr. Neville Chamberlain admitted that the opticians had a case up to a certain point. He had some sympathy with their claim that persons who had properly qualified themselves to treat errors of refraction not requiring medical attention should have a special label, and he would like to meet this point. The difficulty out of which he could not see his way was how patients suffering from simple errors of refraction could be distinguished from those in whom defect of vision was due to some pathological condition.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### Births and Deaths Registration Bill.

The Bill introduced by Mr. Tinne to amend the law relating to the registration of births and deaths was considered on Tuesday, March 23rd, by a Standing Committee of the House of Commons. The object of this Bill is to render more complete the legal safeguards in relation to the disposal of the dead. so as to prevent any possibility of the concealment of crime. Local authorities are empowered by the measure to arrange for the medical inspection in certain instances of the bodies of deceased persons. and stillbirths are required to be registered as an additional safeguard for the protection of infant life. Clause 1, which prohibits the disposal of a body except on a registrar's certificate or a coroner's order, was agreed to with slight amendments, as were also a number of other clauses containing provisions of a consequential character. Major-General Sir Richard Luce moved an amendment providing that if the cause of death was unknown to the medical practitioner called upon to certify, or if he was of opinion that death had arisen from, or been accelerated by any violence, neglect, poison, or other unnatural cause, or had followed as an immediate sequence to the administration of an anæsthetic, he should not grant any certificate of death, but should forthwith report the circumstances to the coroner. He said that the object of the amendment was to lay down some definite procedure to guide medical practitioners who might be in doubt. Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) said that there was no necessity for the amendment because it was already the duty of medical men and others under the Common Law in cases of this kind to give immediate notice to the coroner. Sir Richard Luce withdrew his amendment.

The same Bill was further considered in Standing Committee on Thursday, March 25th. Mr. Groves opposed Clause 7, which empowers certain local authorities in cases where a body has not been seen by a registered practitioner since the death to provide for its medical inspection on the request of the coroner for the district. He said there was a fear among a large section of the population that insufficient attention was paid by the medical profession to the possibility of premature burial. Sir Kingsley Wood supported the clause. Referring to a proposed new clause standing in the name of Mr. Groves which provided that a death should not be registered unless and until there had been delivered to the registrar for the district a medical certificate of the fact and cause of death, he said this was a proposal which had wrecked every previous Bill of this kind. In the view of the Government there was not a sufficient body of evidence to warrant such a drastic provision. On a division the clause was struck out of the Bill by 10 votes to 7. Mr. Groves did not move his proposed new clause. The Committee stage was concluded and the Bill was ordered to be reported with amendments to the House.

## HOUSE OF LORDS.

### Thursday, March 25th.

### Legitimacy Bill.

The Lord Chancellor moved the second reading of the Legitimacy Bill which he said was in substance similar to the Bills of 1924 and 1925. The main purpose was contained in the first clause which provided that where the parents of an illegitimate person married, or had married one another, the marriage should render that person legitimate from the commencement of the Act if the marriage had already taken place, or from the date of the marriage, whichever last happened. The schedule of the Bill provided that the Registrar-General should not re-register the birth of a legitimated person in any case where information with a view to obtaining such re-registration was not furnished to him by both parents, with three exceptions. The first was that the person acknowledging himself to be the father of the legitimated person had been entered in the register in pursuance of Section 7 of the Births and Deaths Registration Act, 1874; the second, that the paternity of the legitimated person had been established by an affiliation order, or otherwise. by a court of competent jurisdiction; and third, that a declaration of legitimacy had been made under the Legitimacy Declaration Act, 1858.

Viscount Haldane said that on the whole the Bill was a fair compromise on a matter in regard to which there had been a great divergence of opinion.

The Bill was read a second time.

### Coroners Bill.

The Coroners (Amendment) Bill was considered on report.

The Lord Chancellor moved a new clause providing that the Coroners Act, 1892 (which relates to the appointment and powers of deputy coroners) should apply with the necessary modifications to the coroner for the King's household as it applied to county and borough coroners, and in particular with the modification that the appointment of a deputy to the coroner for the King's household should be subject to the approval of the Lord Steward. He explained that it was necessary to make provision for the appointment of a deputy coroner of the King's household in case the principal coroner should be unable to perform his duties.

The new clause was agreed to.

On Clause 21, which deals with the power of a coroner to request specially qualified persons to make post-mortem and special examinations, Subsections (2) and (3) as printed in the Bill were omitted on the motion of the Lord Chancellor, and the following new subsections were inserted in their place:—

(2) If any person who has made such a post-mortem or special examination as aforesaid is summoned by the coroner as a witness he may be asked to give evidence as to his opinion upon any matter arising out of the examination, and as to how in his opinion the deceased came by his death.

(3) The provisions of this Act prescribing the fees payable to medical witnesses shall not apply with respect to any examination made at the request of the coroner under this section. but the fees payable in respect of any such examination shall be such as may be prescribed by the schedule of fees, allowances, and disbursements made by a local authority under Section 25 of the Coroners Act, 1887, or by rules made by the Secretary of State under this Act.

The Lord Chancellor moved the following new clause dealing with fees to medical witnesses:—

The fees payable to a legally qualified medical practitioner who has made any post-mortem examination by the direction or at the request of a coroner, or who has attended an inquest in obedience to a summons of a coroner under the Coroners Act, 1887, shall (save as in this Act otherwise expressly provided) be as follows, that is to say: (*a*) For attending to give evidence at any inquest whereat no post-mortem examination has been made by the practitioner, one guinea; and (*b*) for making a post-mortem examination of the body of the deceased and reporting the result thereof to the coroner without attending to give evidence at an inquest, one and a half guineas; and (*c*) for making a post-mortem examination of the body of the deceased (including the making of a report, if any, of the result thereof to the coroner) and for attending to give evidence at an inquest on the body, two guineas:

Provided that no fee or remuneration shall be paid to a medical practitioner for the purpose of a post-mortem examination instituted without the previous direction or request of the coroner.

The new clause was agreed to.

On the motion of the Lord Chancellor the following new clause was agreed to applying the Coroners Acts to the City of London:—

From and after the occurrence of the next vacancy in the office of coroner for the City of London the provisions of this Act and of any other enactment relating to the office of borough coroner or to borough coroners shall apply with respect to the City of London as if the Common Council were the local authority and as if the coroner for the City of London were a borough coroner, and any expenses of the Common Council under the said enactments shall be defrayed out of the general rate.

The report stage of the Bill was concluded.

# HOUSE OF COMMONS

## WEDNESDAY, MARCH 24TH.

### *The Geneva Opium Convention*

Viscount SANDON asked the Secretary of State for Foreign Affairs whether the Opium Convention had been ratified by the Government; if not, why it had been delayed and when it would be ratified; what Governments had deposited ratifications at the League of Nations; whether the Convention had yet taken effect; and whether the Central Board had been set up.—Sir A. CHAMBERLAIN replied: The British ratifications of the Opium Agreement and Dangerous Drugs Convention, signed at Geneva on Feb. 11th and 19th, 1925, respectively, were deposited with the League of Nations on Feb. 17th. So far as H.M. Government are aware, no foreign Power has yet ratified the Agreement or Convention. Under Article 36 of the Convention, the Convention will not come into force until it has been ratified by ten Powers and under Article 19 the Central Board will be appointed within three months from the coming into force of the Convention. Under Article 14 of the Opium Agreement, the Agreement will come into force on the ninetieth day after the receipt by the Secretariat General of the League of Nations of ratifications by two Powers.

## THURSDAY, MARCH 25TH.

### *Physical and Medical Standards in the Navy*

Mr. HORE BELISHA asked the First Lord of the Admiralty why the physical and medical standard of the non-continuous service recruits was being lowered, seeing that present serving ratings who had previously passed the highest physical and medical tests were now being invalided in large numbers, the cause in the majority of cases not being attributable to naval service.—Mr. DAVIDSON (Parliamentary Secretary to the Admiralty) replied: Assuming that the question refers to the physical and medical standards for special service seamen, it is not considered necessary to insist on quite the same high physical and medical standards for special service seamen as for long service ratings. The proportion of naval ratings who are invalided annually is quite small.

### *Resignation of Medical Staff at Paris Hospital.*

Major-General Sir RICHARD LUCE asked the Secretary of State for Foreign Affairs whether his attention had been called to the position created at the Hertford British Hospital, Paris, by the resignation of the medical staff; and, if so, what action he proposed to take in the matter.—Mr. A. M. SAMUEL (Parliamentary Secretary to the Department of Overseas Trade) replied: I am aware that the medical staff of the Hertford British Hospital, Paris, resigned in November, 1924. The staff has been replaced, and no action on the part of H.M. Government appears to be necessary.

### *Accident to Boys at Coal mines.*

Mr. HAYDAY asked the Secretary for Mines the number of accidents, fatal and non fatal, respectively, received by boys of 16 years of age and under employed in or about the coal mines for the year ending 1925.—Colonel LANE FOX replied: Seventy nine boys of 16 years of age and under employed in and about mines under the Coal Mines Act were killed during the year 1925, and 15,211 were disabled for more than three days. The number of boys employed in 1924, the latest year for which figures are available, was 41,700.

### *Artificial Sunlight Treatment*

Sir HARRY BRITTAIN asked the Minister of Health to what extent the artificial sunlight treatment had been introduced into the hospitals in this country; and whether this form of treatment was proving successful.—Mr. N. CHAMBERLAIN replied: I have no complete information as to the number of hospitals in this country in which this form of treatment is provided, but arrangements for the provision of this treatment have been approved in connexion with tuberculosis and maternity and child welfare schemes, in the case of 26 hospitals and sanatoria (exclusive of tuberculosis dispensaries and maternity and child welfare clinics). Reports on the approved schemes are now being considered in my department and I am not yet in a position to give a complete reply to the second part of the question, but I may say that this form of treatment, if appropriately applied, is undoubtedly beneficial in many cases.

### *Approved Societies and Dental Treatment*

Mr. ROBINSON asked the Minister of Health what approved societies made provision for dental treatment; and if he would take steps to ensure that dental treatment and the provision of dentures should be included in the treatment provided under the National Health Insurance Acts.—Mr. NEVILLE CHAMBERLAIN replied: Some 3500 approved societies and branches in England, having a total membership of over 10,500,000 insured persons have adopted schemes of additional benefits that include payments towards the cost of dental treatment. These numbers are likely to be materially increased from next July, when schemes following the second valuation will become operative for societies and branches valued as at the end of 1923. The Royal Commission on National Health Insurance, who considered the subject exhaustively, came to the conclusion that while a complete dental service for the whole insured population would be eminently desirable, it is not at present financially practicable, and they recommended that the general arrangements for dental service under additional benefit schemes should be continued. Societies and branches having a sufficient disposable surplus on valuation are reminded of the possibility of their adopting dental benefit as an additional benefit, and I propose that this shall remain the practice.

### *Encephalitis Lethargica*

Mr. BRIANT asked the Minister of Health the number of cases of encephalitis lethargica notified during each of the years 1922, 1923, 1924, and 1925.—Mr. N. CHAMBERLAIN replied: The information asked for is as follows: Number of cases notified in England and Wales (including port sanitary districts): 1922, 454; 1923, 1025; 1924, 5039; 1925, 2035 (provisional).

### *Reductions in Pensions Staff*

Lieut. Colonel DALRYMPLE WHITE asked the Minister of Pensions what reduction of staff was effected in the Ministry of Pensions during the year 1925, and what were the respective percentages of reduction in Scotland and in the rest of the country.—Major G. C. TRYON replied: The staff of the Ministry were reduced, during 1925, by 4356, from 16 475 to 12 110, the percentage reduction in Scotland being 23·5 and in the rest of the country 26·7.

## FRIDAY, MARCH 26TH.

### FACTORY LAW REFORM.

Miss WILKINSON moved the second reading of the Factories Bill, a measure introduced by the Labour Party to consolidate with amendments the various enactments relating to factories and containing 113 clauses dealing with health, safety and welfare conditions, accidents and industrial diseases and the employment of women, young persons, and children. She said that during the last 25 years there had been an extraordinary increase in accidents in factories and workshops. The number in 1924 was 159,723 involving actual absence from work, or an increase compared with 1923 of 11,000. There were in 1924 950 fatal accidents, an increase of 89 over 1923. The Chief Inspector of Factories had pointed out that all accidents were not recorded. The Industrial Fatigue Board, in their report for 1925, said the loss of time due to sickness, most of it preventable, cost the country ten times more than strikes and labour disputes. To prevent this waste of human assets and human capital was the object of the Bill. This was a private Member's Bill only in a technical sense. It was drawn up by the Home Office originally. She believed its godfather was Mr. Bridgeman, the present First Lord of the Admiralty, but his work had been extended and considerably improved by Mr. Arthur Henderson when he, too, was Home Secretary. The Bill was, in fact, founded upon numerous inquiries, conferences, and special reports. It contained a very elaborate health code, dealing with cleanliness, overcrowding—increasing the space for each worker from 250 to 400 cubic feet—temperature, ventilation, lighting, sanitary conveniences, and also general provisions for safety. The employment of children was prohibited. For women and young persons the total hours to be worked, exclusive of intervals for meals and rest, were not to exceed nine in any day or 48 in any week, and certificates of fitness of young persons for employment would have to be provided. The new clauses and the altered clauses provided health and safety codes and a general improvement in factory law. There was not one thing in the Bill which good employers were not doing already.

Mr. STAMFORD seconded the motion for the second reading.

Captain MACMILLAN moved the following amendment:

> "That this House, while recognising the necessity for the introduction during this session of a Bill to consolidate and amend the laws relating to factories for the purpose of circulation and discussion in consultation with the interests affected, is of opinion that a measure of such far reaching importance should not be introduced as a private Member's Bill."

He said that the procedure contemplated in his amendment was that the Government should introduce a Bill dealing with this subject this session for the purpose of circulation and discussion by all the interests affected. As a result of this method he hoped that by the time the Bill put forward by the Home Secretary went to Committee it might be to all intents and purposes an agreed measure. They looked to the Government to produce a fair-minded Bill which would not be calculated to throw unreasonable demands on industry and which would confer continuous and progressive benefits on those engaged in industry.

Sir Leslie Scott seconded the amendment.

Sir W. Joynson-Hicks (Home Secretary) said while he was keen on all questions of social reform, and the Factories Bill was one of the first measures which he took in hand at the Home Office, nothing was to be gained by exaggerating the evils of the present system. It was untrue to say that if the Bill were not passed this year thousands of lives would be lost by accidents in the factories. There had been a slight increase in the number of fatal accidents recorded during the past year, but the numbers had persistently risen and fallen in proportion to the number of men and women employed in trade. In 1913 the number was 1309, and in 1919, when more people were employed, it was 1385; and in 1920, when trade was at its highest point, 1404. While he had been considering the Factories Bill improvements in nine or ten considerable industries had been made by regulations issued by the Home Office and arrived at with the concurrence of the employers and workers concerned. The Bill now presented for second reading conferred great powers and responsibilities on the Home Secretary, and in drafting his own Bill he had been doing his utmost to relieve the Home Office of such powers. As nineteen-twentieths of Mr. Bridgeman's Bill was contained in the Labour Government's Bill, so nineteen-twentieths of both these Bills would be contained in the forthcoming Factories Bill. He did not, however, propose to include the provisions affecting night baking. His Bill would abolish the distinction between textile and non-textile factories, and between factories and workshops. He had included new provisions affecting cleanliness, overcrowding, temperature in factories, and sanitary conveniences. There would be special medical provision and supervision in classes or descriptions of factories where there was exceptional liability to sickness or disease; and welfare provision with regard to drinking water, first-aid outfits for workers, protective clothing, and so forth. Many special health provisions included protection against dust, against the lifting of weights, and also dealt with underground work. There was a good deal to be said in regard to the terrible hours worked by women in a few industries. He hoped to deal with that apart from the Washington Convention. He was authorised by the Prime Minister and the Cabinet to say that he would introduce a Factories Bill during the current session for the purpose of consideration and discussion at the earliest possible moment in the session of 1927. That Bill would be one of the principal Government measures of next year and they would do their utmost to pass it into law.

After further discussion the amendment was carried by 184 votes to 109—majority 75.

## Appointments.

Evans, W., M.B., B.S. Lond., has been appointed Assistant Pathologist to the London Hospital.

Gilchrist, Susan, M.B., Ch.B. Liverp., Assistant Medical Officer of Health, Hull.

Holmes, A. Hillyard, M.D. Manch., M.R.C.P. Lond., Visiting Physician to Withington Institution and Hospitals, Manchester.

Hutchinson, R. J., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Haslemere District of the County of Surrey.

## Vacancies.

*For further information refer to the advertisemnt columns.*

*Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College.* Second Asst. Res. M.O. £300.

*Belfast, Mater Infirmorum Hospital.*—Hon. Asst. Gynæcologist.

*Birmingham, Public Health Dept., Tuberc. Sect.*—Asst. M.O. £450.

*Brighton, Sussex Throat and Ear Hospital.*—Hon. Asst. S., Hon. Clin. Asst., and Hon. Asst. Anæsthetist.

*Cambridge, Addenbrooke's Hospital.*—Cas. O., and Res. Anæsthetist. At rate of £130.

*Carmarthen, Joint Counties Mental Hospital.*—Jun. Asst. M.O. £300.

*Derbyshire Royal Infirmary, Derby.*—H.S. £200. Also Asst. H.S. and Cas. O. Each at rate of £150.

*Exminster, Devon Mental Hospital.*—Jun. M.O. £300.

*Gloucester County Mental Hospitals, Wotton and Barnwood.*—Jun. Asst. M.O. £350.

*Hospital for Epilepsy and Paralysis, Maida Vale, W.*—Res. M.O. and H.P. At rate of £150 and £100 respectively.

*Lambeth Parish Hospital, Brook-street, Kennington, S.E.*—Jun. Asst. M.O. £200.

*London Temperance Hospital, Hampstead-road, N.W.*—Surg. Reg. 40 guineas.

*Macedonia Friends Council for International Service.*—Med. Man required. £14 monthly.

*Manchester Hospital.*—Res. Surg. O. £200

*Manchester Royal Infirmary.*—H.S. to Aural, Gynæcological, and Ophth. Depts. At rate of £50. Dickinson Pathology Scholarship. £75. Dickinson Research Travelling Scholarship. £300

*Metropolitan Hospital, Kingsland-road, E.*—Sen. H.P. and H.S., Jun. H.P. and H.S., and two Cas. O.'s. Each at rate of £100.

*Parish of St. John, Hampstead, New End Hospital.*—Sen. Res. Asst. M.O. £250.

*Prince of Wales's General Hospital, Tottenham, N.*—Two H.S.'s. and one H.P. At rate of £120. Also Jun. H.S. and Jun. H.P. At rate of £90.

*Royal Chest Hospital, City-road, E.C.*—Res. M.O. and H.P. At rate of £150 and £100 respectively.

*Royal National Orthopædic Hospital, 234, Great Portland-street, W.*—Hon. Ophth. S. and Hon. Dental S.

*Royal Northern Hospital, Holloway, N.*—H.P. and H.S. Each at rate of £70.

*St. Bartholomew's Hospital, E.C.*—Rose Research Fellowship in Lymphadenoma. £600.

*St. Mary's Hospital for Women and Children, Plaistow, E.*—Asst. Res. M.O. At rate of £130.

*Sunderland Borough Mental Hospital, Ryhope.*—Asst. Med. Supt. £500.

*Truro, Royal Cornwall Infirmary.*—H.S. £170.

*Walthamstow, Wanstead and Leyton Hospital, Orford-road, E.*—Jun. H.S.

*West Ham County Borough.*—Asst. M.O. £600.

*West London Hospital, Hammersmith-road, W.*—Hon. Med. Radiologist.

*West Middlesex Hospital, Isleworth.*—Asst. Med. Supt. £250.

*Westminster Hospital, Broad Sanctuary, Westminster, S.W.*—Asst. Dent. S.

*York City Mental Hospital, Fulford, York.*—Asst. M.O. £440.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Districts of the Uxbridge and Brentford County Courts (Circuits 34 and 46 respectively). Applications should reach the Private Secretary, Home Office, not later than April 21st.

## Births, Marriages, and Deaths.

### BIRTHS.

Grantham-Hill.—On March 19th, at Port Sudan, the wife of C. Grantham-Hill, M.B., of a son.

Hickinbotham.—On March 25th, at Colchester, the wife of J. R. Hickinbotham, M.B., of a daughter.

Martin.—On March 20th, at New Brook House, Atherton, Lancs, the wife of Major W. Y. Martin, T.D., R.A.M.C.T. of a daughter.

### MARRIAGES.

Parkes—Mackintosh.—On March 27th, at Withington Congregational Church, Manchester, Miles Parkes, M.B., Ch.B., to Annie Emily Mackintosh, M.B., Ch.B.

### DEATHS.

Finlayson.—On March 19th, very suddenly at his residence, Elson-road, Formby, Lancs, Harold Turner Finlayson, M.B., Ch.B., aged 36.

Yourdi.—On March 23rd, at Jersey Dispensary, Lieut.-Colonel John Robert Yourdi, O.B.E., R.A.M.C. (Retired List), of Roslyn, La Rocque, Jersey.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Child Welfare in Liverpool.—At the twentieth annual meeting of the Child Welfare Association, held in Liverpool on March 22nd, it was stated that at one time the Association had a warehouse where 250 spinal carriages were stored; now two dozen are sufficient for its needs. Throughout the length and breadth of Liverpool, said the chairman, it would be difficult to find a child growing up into a permanent cripple for lack of efficient treatment. During the year 4885 new applications for help were received, 32,000 parents advised and helped, 1770 children maintained in convalescent homes, 20,000 visits paid to the homes of the children, and 40,000 orders issued for milk for children. Last year a new wing was added to the hospital at Leasowe, and this with other developments cost £24,500.

Testimonial to Dr. Herbert Jones.—The Herefordshire Medical Society is organising a testimonial to Dr. Herbert Jones, medical officer of health for the Herefordshire combined districts, who has been obliged to resign his appointment on account of ill-health, largely due to services in the war. Dr. Jones has a distinguished record of service. In the words of the executive secretary of the Society of Medical Officers of Health, "he has been the chief mover in the matter of security of tenure and superannuation for medical men holding public appointments. In other matters also he has worked as hard for the British Medical Association as for this society, and he has been so busy looking after the interests of other people that in the opinion of many of his friends he has not been ready enough to fight for his own." Dr. Jones's work has been of service to the profession as a whole, and the Herefordshire Medical Society is accordingly making an appeal beyond the limits of the county. Subscriptions should be sent to Dr. John Steed, Staunton-on-Wye, Hereford, before April 30th.

# Notes, Comments, and Abstracts.

## HELIOTHERAPY, PHOTOTHERAPY, AND THE OPEN AIR.

AT a meeting of the Harveian Society on March 18th Dr. Gordon Pugh, chief medical officer of the Children's and Surgical Tuberculosis Services of the Metropolitan Asylums Board, made some interesting observations on prevailing ideas of light treatment. Heliotherapy and phototherapy, he said, were being widely described in the press as more or less recent discoveries of very great value. In particular stress was being laid on an increase in the bactericidal power of the blood, which was supposed to have important effects in the prevention and cure of disease. Dr. Leonard Hill, however, had said at Bath last September that a similar rise was produced by heat or a mustard poultice whenever these produced a lasting erythema. Some of the claims made appeared rather extravagant, and it had to be considered whether any really new therapeutic principle was being introduced, or whether in heliotherapy, and to a more limited extent in phototherapy, the old-established healing agents—fresh air and surface hyperæmia—were appearing in another, perhaps more convenient, form.

After recalling the totally inadequate provision for London's cases of surgical tuberculosis before the hospitals at Alton and Carshalton were opened in 1908 and 1909 respectively, Dr. Pugh related his impressions of the three methods of treatment as experienced at Carshalton—namely: (1) open-air therapy, which was British in origin, the first hospital for the complete open-air treatment of surgical tuberculosis being the Baschurch Hospital, founded by Miss Hunt in 1902; (2) heliotherapy, which might be called the Swiss method, since it owed its popularity to the efforts of Dr. Rollier, who began to use general sunlight baths in 1903; and (3) phototherapy, which might be regarded as Danish, as it was started in 1894 by Dr. Finsen, who died ten years later. Phototherapy had been made more generally available by Kromayer in 1901, when he introduced the mercury-vapour quartz lamp; and had been modified still further in 1913 by Reyn, who added to local treatment general irradiation by the carbon-arc lamp on the ground that its rays more nearly resembled those of the sunlight used by Rollier.

### *Heliotherapy and the Open Air.*

Speaking first of constitutional treatment by the open-air method, Dr. Pugh showed photographs of the satisfactory results obtained by this means at Carshalton in surgical tuberculosis, marasmus, and rickets, before the gradual adoption of heliotherapy from 1914 onwards. Each of the component parts of open-air life, he said, was of importance—the exposure of limited portions of the body to movements of air, changes of temperature, and sunshine or skyshine; the effect of breathing cool air with low vapour tension in promoting evaporation from the respiratory membrane, and so enhancing the outflow of secretion from it and the flow of lymph and arterial blood through it, and possibly other attributes yet unrecognised. In addition, there was the potent influence, whatever it might be, embraced in the term "change of air and environment."

Heliotherapy might be regarded as an improved form of open-air therapy, the presence of sunlight encouraging and rendering the open-air life more easy and pleasant. The main evidence for Rollier's belief that the sunlight was the important factor rather than the open air, was that the deeper the pigmentation became the better the prognosis. Rollier appeared to regard pigment as a transformer of light energy into energy which was spent in some chemical reaction useful in defence. It could not be denied, said Dr. Pugh, that a close parallelism between pigmentation and favourable prognosis—if such parallelism really existed—would be very strong evidence that the sunlight was the potent agent; but Dr. Pugh's observations at Carshalton did not confirm it. In 1922 a careful note was made of the pigmentation of 232 cases of tuberculosis of spine, hip, and knee, many of them severe cases admitted with sinuses. Three and a half years afterwards, when all except 21 nearly convalescent cases were either cured or dead, they were classified according to result. The mortality among the "very good" pigmenters had been 16 per cent., the "good" pigmenters 15 per cent., the "slight" pigmenters 10 per cent., and the non-pigmenters 0 per cent. He regarded this as disproving Rollier's theory. Dr. Hill, he thought, had reached the solution when, in 1922, after an investigation in collaboration with Dr. Argyll Campbell, he attributed the benefit of heliotherapy as conducted at Alton mainly to the great rise in metabolism which occurred as a result of the cooling power of the open air, and added that the rise due to sunlight per se was insignificant, but that sunshine promoted evaporation from, and flow of lymph through, ulcers and discharging sinuses, *and also warmed the diseased parts exposed to it.*

It was true that Dr. Hill had modified his views since then, but so far Dr. Pugh had not seen clinical reason to do so. It seemed possible, he said, to explain all the benefits of heliotherapy as being produced partly by suggestion, partly by the increased metabolism induced by the very free exposure to the air which heliotherapy involved, partly by surface hyperæmia and the resulting lymphorrhœa, and partly, as in rickets, by the formation of vitamin D through the action of the sun's rays on cholesterol.

### *Phototherapy.*

Dr. Pugh then discussed the influence of artificial light in treatment, and the importance of separating subjective from objective manifestations. The subjective effects, in his experience, were more marked than the objective. Suggestion played some part, no doubt; but this was not all. Dr. Hill had said that there was no increase in metabolism. Could the stimulation of nerve-endings by the rays act reflexly on internal processes, and so produce the feeling of well-being which made this treatment so much appreciated by the over-worked, the neurotic, and the run-down? On the more serious forms of neurasthenia it had no permanent effect so far as his own limited experience went; he had treated two cases only, one resulting from war shock, the other from accident. On the objective side three effects had to be considered: (1) hyperæmia of the surface, which conceivably might lead to reduction of high blood pressure by vaso-dilatation, lymphorrhœa (which would assist in the healing of ulcers and superficial sinuses), and improvement in abnormal skin conditions—e.g., eczema, psoriasis, alopecia areata, and lupus; (2) production of vitamin D by the action of rays on cholesterol; and (3) the short-lived increase in *hæmo-bactericidal* power.

Dr. Pugh demonstrated a large number of photographs of patients before and after exposure to from 30 to 80 carbon-arc baths. In a glandular abscess of the neck, with reddened undermined skin over it and a small discharging sinus, the undermining had continued to extend. In similar cases in which the undermined skin was cut away and the lesion scraped, and other superficial sinuses and ulcers connected with tuberculous phalanges and tarsal bones, healing was definitely hastened by the light bath, especially when there had been previous scraping. It was interesting to note that the Finsen Institute had *two operating theatres* for 149 beds. Sinuses connected with deeper structures—e.g., spine and hip-joint, in which help was especially desirable—showed absolutely no improvement; an old empyema sinus similarly remained unchanged. In some cases the Murray Levick red-ray lamp was used on superficial ulcers, and appeared as efficacious, if not more so. A severe case of acute general eczema, after two months' ineffective treatment by ointment, was given carbon-arc irradiation; 29 baths in three months got it well under control, and a month later it was quite cured. Two other cases of eczema still under treatment showed little or no improvement. A case of psoriasis had not improved after 40 carbon-arc baths; one of the larger patches was then blistered by the Kromayer lamp, and it had completely disappeared when the scab separated. One child with a localised patch of lupus on the cheek showed, beyond a disappearance of the scaliness, no definite improvement at the end of two months in spite of 17 general light baths; the patch was then blistered with the Kromayer lamp three times at intervals of about three weeks, the arc bath being continued; after six weeks' rest from treatment there was marked improvement, only a few active nodules remaining. Several other cases of more extensive lupus affecting the nose and limbs, which had been given many carbon-arc baths, showed no benefit beyond a cleaning up of the surface.

Dr. Pugh drew attention to statements by several dermatologists about the limitations of usefulness of the Finsen lamp in the treatment of *lupus*, and to the suggestion of Mr. Sampson Handley that, in any method of treatment, radium γ rays should be used around the circumference of the area to excite an aseptic lymphangitis and obliterate the lymphatic vessels around the infected area, so as to provide an insuperable barrier to spread. This suggestion, he thought, might be of value, as he had used radium γ rays in the treatment of tuberculous adenitis during the past three years with very satisfactory results. As regards rickets, he thought it would generally be impracticable to withdraw a mother from household duties at the busiest time of the day to take her child regularly to a light treatment clinic; and it was probably unnecessary, as the administration of a sufficient quantity of cod-liver oil at home answered the purpose in the majority of cases, particularly if it was adopted as a preventive measure during the autumn and winter months.

### *High Blood Pressure: Infectious Diseases.*

Dr. Pugh's experience of the use of general arc baths in the treatment of high blood pressure was, he said, naturally very small. In one case, however, the pressure, which had been reduced from 180 to 140 mm. by six weeks' rest, fell to 136 mm. after a course of carbon-arc baths; at the end of a second course, given after a long interval, the pressure was 150 mm. In another case treatment was commenced only a fortnight before; the pressure fell 4 mm. from 105 mm. after the first light bath, and then 10 mm. as the result of epistaxis; at the end of the fortnight, during which time the patient had had six light baths and several attacks of epistaxis, the pressure was 150 mm. Both patients declared that they felt better for the treatment and had lost their headaches. It had been said that light treatment increased the hæmo-bactericidal power, and that this might put up the general resistance of the body to disease.

So far as infectious diseases were concerned this had not been confirmed at Carshalton. Epidemic catarrh and chicken-pox, when introduced into wards, had affected patients indiscriminately, whether they were receiving light treatment or not. This was compared with the influence of open-air treatment in the limitation of spread of infection. Measles had been recently introduced into one ward of a block containing young recumbent patients, 30 of whom were being treated indoors in two wards and 30 in verandahs. The disease spread into the other ward, and of the 22 indoor children who had not previously had measles, 21 caught it; none of the 13 verandah patients who had not had measles developed it, although they were looked after by the same nurses as the indoor children. Vaccination had not been influenced by courses of light treatment, whether these were given before or after, or both. He had been informed by Dr. T. H. Woodfield, of the Park Fever Hospital, that his impression, after using ultra-violet light in the treatment of 20 cases of whooping-cough, was that good was done in the early stages, but that when well-established the disease was not influenced by light treatment; his results had been inconclusive for diphtheria carriers.

Dr. Pugh trusted that the introduction of phototherapy into town hospitals would not lead to delay, however short, in the transfer of cases of surgical tuberculosis to country institutions, as it was obvious that it had very serious limitations as compared with open-air or sunlight therapy.

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# PUBLIC HEALTH IN PERSIA.

## 1914–24.

BY A. R. NELIGAN, M.D. LOND., M.R.C.S., D.T.M. & H. CAMB.,

PHYSICIAN TO H.M. LEGATION, TEHRAN; BRITISH REPRESENTATIVE ON THE PERSIAN SANITARY COUNCIL.

(*Concluded from p. 694.*)

## PART III.

### *Medical Practice.*

As is only natural in a country which produced Avicenna and Rhazes, the practice of medicine is a popular profession. Tehran, for instance, has a doctor for every thousand inhabitants. There are, on the other hand, country districts, hundreds of square miles in extent, where there are no doctors at all. Before the passing in 1911 of a law obliging all students to take the State diploma through the Government Medical School, permits to practise could be obtained by apprentices of native doctors and assistants trained in the various foreign hospitals. The "authorised" doctors (médecins autorisés) still form the bulk of the profession. A second class are Persians qualified in their own or foreign medical schools (médecins diplomés). Most of those who have gone abroad have studied in France; a much smaller number have qualified at Beyrout, in England, America, or Germany. Foreigners are expected to register their diplomas at the Ministry of Public Instruction. They include medical officers of Legations and Consulates, doctors in Persian employ, missionary doctors, medical officers of commercial undertakings such as the Anglo-Persian Oil Company, and private practitioners. This last class practically did not exist before the Russian revolution; there is now in the north of Persia a considerable number of Russians and Armenians with European qualifications.

Persian practice is largely medical. There are few surgeons, though in many towns there are men who extract cataract and cut for stone. While old remedies are in constant use and the distinction between "hot" and "cold" much insisted on by the older practitioners and by patients, foreign drugs such as antipyrin, phenacetin, aspirin, calomel, boric acid, zinc sulphate, sublimate, salines, and, of course, quinine, are much employed and their names and uses well known by the laity. A striking feature of Persian practice is the avidity with which the latest pharmaceutical products of enterprising firms in Europe are used. The country is flooded with samples and circulars names of certain reputable firms, however, are well known and their preparations highly esteemed. It is only within the last three years that X ray examinations and treatment have been possible in the capital, and there are now two outfits. These, and the opening of a public pathological laboratory in 1921, have done much to improve methods of practice.

There is no dental school and there are very few foreign dentists. Again the capital is more fortunate in this respect than the rest of the country. Locally trained dentists are now required to pass a simple examination.

A Medical Debating Society was formed in Tehran in 1924 with Dr. J. Scott, medical superintendent of the Indo-European Telegraphs, as President. It holds fortnightly meetings during the spring, autumn, and winter, and has formed the nucleus of a pathological museum.

Chemists' shops are numerous, but highly qualified chemists few. During recent years regulations have been drawn up, so that at present the better class will not supply poisons or narcotics without a doctor's order, and a record has to be kept of sales. In 1910 a law was passed regulating the practice of pharmacy and obliging chemists to take out permits from the Ministry of Public Instruction. They were given to three categories: (1) those who had European diplomas; (2) those who had worked continuously in a reputable pharmacy during the previous five years; (3) those who could pass a simple examination locally. In 1922 a school of pharmacy was opened in connexion with the medical school, and all would-be chemists must pass through it. Unfortunately the school is poorly equipped.

### *Irregular Practitioners.*

The number of irregular practitioners is legion. Every woman is an authority on medicine and uses remedies such as castor oil, cassia, manna, infusions of violets and decoctions of various herbs, and opium. Some women specialised in the treatment of syphilis by calomel fumigations, but since the introduction of salvarsan less has been seen of their results. There are bonesetters, generally butchers, who adjust displaced bones and produce disastrous effects in the case of fractures. The barbers cup, bleed, extract teeth, do arm-to-arm vaccination, and perform circumcision. Massage is done by the bath attendants. Charms are in regular use, and the choice of doctor or treatment is frequently decided by a reference to the Koran or by counting beads. The midwives make internal examinations and introduce strange substances to hasten labour or provoke abortion. The latter practice has become regrettably common in the capital, and is not always the work of uneducated women.

Apart from the regulations about diplomas there are no laws governing the practice of medicine, except one to the effect that the component drugs of a prescription must all be clearly indicated. Post-mortem examinations, like dissection, are contrary to the religious law.

### *The Opium Question.*

The opium question has become one of the most difficult of the many problems which the Nations in Council are striving to solve. For a producer country like Persia, with impoverished finances and many thousands of addicts, it is impossible to exaggerate the importance of the fact that international efforts are being made to limit the cultivation and the abuse of opium. Only a short résumé of this complicated question can be given in a paper on matters of public health, and it should deal chiefly with its medical side and with the problem of the abuse of opium and of its limitation, as it affects Persians. Economic questions are, however, so inextricably bound up with both these aspects that it will be impossible not to mention them.

### *Abuse of Opium in Persia.*

It is difficult to say when opium was introduced into Persia, and when its use for other than medical purposes started. Since, however, it is believed that the poppy plant reached China from Arabia (the Chinese word for opium is a corruption of the Arabic *afiyun*), it does not seem necessary to look further than Persia's neighbour. Moreover, the famous Persian physician, Abu Ali Sina (Avicenna), who lived in the tenth century, when writing of the use of opium, warned his readers against its abuse. There can be no doubt, then, that both have been known for at least some thousand years. Opium smoking is, however, of comparatively recent origin; it was introduced from India into East Persia rather more than 100 years ago, and there are parts of the country where the habit was not known as recently as the end of last century.

To-day the devotees of opium in Persia may be numbered by hundreds of thousands in all ranks of society. It is impossible to give even approximately exact figures, but in 1914 the Municipality of Tehran estimated the number of smokers alone in the city as 25,000. At present some 80 lb. of prepared opium are liberated every day in Tehran (not all for use locally), and probably an equivalent amount is put into circulation fraudulently. The proportion of one smoker in ten of the population is almost certainly an over-estimate for the capital, but in the case of some towns in, say, the province of Khorassan, it would as certainly be found to be much higher.

The users of opium may be divided up into the following groups:—

*The Eaters.*—1. Those who take a small quantity (½–1 gr.) once or twice a day. The drug is used as a sedative tonic just as tobacco is used. 2. Those who take opium for its well-known effects. The allowance may reach three, four, or more drachms a day.

*The Smokers*, the larger of the two groups, comprise: (1) Occasional smokers of prepared opium. (2) Regular smokers of prepared opium, by far the most numerous class. Two drachms is an average quantity. (3) Smokers of *shireh*, a mixture of prepared opium and the burnt residue left in the opium pipe. In parts of Persia the *shireh* smokers are more numerous than the smokers of prepared opium; they are physical and moral wrecks. (4) Smokers of *negari*, a mixture of the burnt residues of opium and of *shireh*. Inconsiderable in numbers. The wide-bored stem of the *negari* pipe, thoroughly well incrusted with the burnt residue after use by generations of smokers, is said to be without price, and to produce its effect by simply drawing air through it! Good prepared opium contains 10–12 per cent. of morphine, *shireh* containing 10 per cent.

While making all allowance for the ingestion of opium in "tonic" doses for the moderate smokers, and for the fact that, in a country where doctors are few and far between, opium is a great solace to people in pain or attacked by malaria, there can be no doubt that the opium habit is doing much harm. It is, moreover, increasing. These statements are not merely the result of personal observation; they represent the considered opinions of Persians competent to judge, and they lead up to the question of the limitation of the abuse of opium. Here it is necessary to give some facts from the economic side of the Opium Question in Persia.

### *Production and Restriction of Opium.*

Roughly 870 tons of opium sap were produced in the year 1923–24. Of these 200 tons were exported, chiefly to the Far East. If allowance be made for under-valuation and smuggling, opium represents 20–25 per cent. of the total value of Persia's exports, not including oil.

The good quality of Persian opium, the demand for opium and morphine in the Far East, and the high prices obtained, have led to a great increase in opium poppy cultivation in recent years. No doubt, too, the prospect of international legislation being enacted to lessen the opium evil prompts cultivators to make hay while the sun shines. By law the whole of the opium sap should enter the Government warehouses. The question of Government control is a difficult one in a country as large as Persia, with a scattered population and difficult communications, and especially in the case of a crop so easily grown as opium; but it is slowly though steadily being improved. The opium sap for use in the country is worked up into sticks (a process in which it loses about one-third of its weight), a banderole is attached, and the merchant on regaining possession pays the Government tax. Customs duty has to be paid on the opium cake for export. The total opium revenues for 1923–24 amounted to 8 per cent. of the total revenues of the country. The opium trade employs many thousands of people. In the town of Isfahan it is estimated that at least 25 per cent. of the population lives by opium. The annual average return to landowners and peasants on the opium crop is about £2,100,000 at par. Transport is difficult and costly in Persia, but opium, on account of its small bulk and high value, presents no difficulties. It always fetches ready money—in fact, it takes the place of money. The crop is easily raised and taken and it requires water only at the season when water is plentiful.

These few briefly stated facts show how difficult the problem of restriction of the cultivation and abuse of opium is in the case of Persia. The abuse of opium is recognised by Persians in all classes of society as a national calamity. Their Government has stated, through its representative in the recently held Opium Conferences, its readiness to coöperate in the effort to reduce the evil both at home and abroad. It has introduced or proposed legislation of its own initiative which is directed to that end, and has expressed its willingness to go farther. The Sanitary Council has been instructed to make recommendations for the control of opium-smoking and of the sale of opium, cocaine, and their derivatives. The Governor of Bujnurd, in 1923, took the remarkable step of forbidding opium poppy cultivation in his district. On the other hand, Persia has entered on a period of intense desire to develop her resources; her revenues are not sufficient to meet her needs, and any diminution in the volume of her opium trade would mean serious losses. The solution, already put forward officially, probably lies in the gradual replacement of the cultivation of opium by other crops or trades. There are, however, great difficulties in the way—financial, economical, and physical.

The complexity of the question of suppressing the use of opium in the East is great, and, in the latter end, one is left asking what will be the result if it be achieved. Certainly in the case of Persia, where the use of opium residue as opposed to prepared opium is comparatively limited, to see opium replaced by morphine, cocaine, or alcohol would not be an upward step.

### *Hashish, Morphine, and Cocaine.*

It is difficult to learn the extent of the abuse of hashish. Addicts are numerous in Khorassan and among the dervish fraternity. The drug is smoked in different ways and may also be ingested. There is no Government control, but it is intended to pass laws forbidding the cultivation of the plant and its use. Hashish and opium are occasionally smoked together (*Ruh' ul ajaneh:* the soul of Satan).

In spite of the fact that the Governor of Nishapur reported in 1914 that morphine was being used extensively by injection no further evidence of the practice has been received. The authorities confiscated some parcels of syringes at about the same time. As long as opium for smoking is to be had easily, it is unlikely that the syringe will oust the pipe with its elaborate ritual and the atmosphere of sociability which it creates. It is reasonable to suppose, however, that increasing interference with the liberty of the subject in the matter of opium might lead to the abuse of so easily smuggled a drug as morphine.

The question of narcotic drugs has been examined by the Persian Government since 1911. In 1919 the Ministry of the Interior consulted the Sanitary Council about regulations for the sale of morphine. In 1920 the Ministry of Foreign Affairs reported a great increase in the quantity of cocaine imported and asked the Council to fix the requirements of doctors. As a result in 1922 the Council was charged with the issue of permits for the importation of opium derivatives and cocaine and its similars. The amount of morphine which any one chemist or merchant might import at a time was fixed at 20 g. All parcels were to be sent to the Council's offices for control and distribution, a cumbrous system which has caused trouble with importers living near the frontiers.

Cases of cocaine addiction have not been seen even in the capital except in one or two Persians who have learned its use in Europe.

### *Alcohol.*

Theoretically there should be no need for a paragraph with this heading in a report on a Mussulman country; but the land of Sa'adi, Hafiz, and Omar Khyam has always been famous for its wine, and in modern times native alcohol (*arak*) has been extensively made. There is, however, no alcohol problem at all comparable with that found in countries further west. Be that as it may, it is interesting to note that in 1921 the revolutionary cabinet of Said Zia ed Din made a courageous attempt to introduce prohibition, and the revolutionary programme was announced at a State banquet at which water, fermented milk, and fruit syrups were the liquid refreshments. It was a difficult policy to carry through on account of the stocks of wine in existence and of the large number of persons who gained their living by wine and *arak* making. In the same year Persia was represented at the International Conference on Alcohol held at Geneva. In 1923 the Ministry of Finance proposed regulations for restricting the import of alcohol by foreigners, and the Sanitary Council recommended that its use should be limited to medical and industrial purposes. At present there are no restrictions on the import of foreign wines and spirits, or the making of wine, although there is a small tax on each load of grapes for use therein. *Arak*, which is made from raisins, is submitted to a heavy tax, which is foregone in the case of alcohol for medical and pharmaceutical purposes. The distilleries in Tehran have been centralised for purposes of control. It is to be noted that the existence of considerable European, Parsi, Armenian, and Jewish communities makes the manufacture and sale of wine and *arak* an easy matter.

### *The League of Nations and the Sanitary Situation.*

As a result of the appeal, to which reference was made in an early paragraph, the League of Nations, in July, 1924, sent out Dr. John Gilmour to report on the sanitary situation. He spent several months in the country, and his preliminary report has reached the Persian Government. An interesting recommendation which it contains is that selected Persian doctors should be sent to Europe for instruction in hygiene, under the supervision of the Sanitary Section of the League.[1]

A society, called the Society of the Red Lion and Sun, was formed in 1923 to carry out humanitarian work comparable to that done by the Red Cross, Red Crescent (Turkey), and Red Sun (Japan) Societies. It has been officially recognised by the International Organisation of Red Cross Societies.

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[1] League of Nations Health Organisation. Report on Sanitary Conditions in Persia. Obtainable from Constable and Co., Orange-street, London, W.C. 2.

### *Innovations.*

Before concluding, two interesting changes that have taken place in Persia of recent years, but of a less obviously medical nature than those recounted above, will be described. One is the increasing use of the potato, which, if continued, will provide the country with a valuable addition to, or substitute for, the usual diet of bread or rice. The other is the introduction of field games. Polo and Association football have been played in Persia by Englishmen for many years. Polo, originally a Persian game, has now become very popular among the officers of the army and tournaments are held. Football has within the last four years made great progress, and in the capital regular competitions are held for clubs and for schools. The terms used are the English ones, and the keenness is intense. In the autumn of 1924 an elaborate athletic meeting was held in Tehran. Bicycling has also become very popular.

All who have come in contact with young Persians will realise what an enormous effect for good the introduction of active sports will have on their health and morale. It is for this reason that the subject is worthy of notice as of real importance to the public health of the country.

### *Conclusion.*

A review of public health questions in Persia during the past 11 years shows that the most important problem is presented by malaria, and that so far no prophylactic measures on a large scale have been attempted.

As regards the great epidemic diseases certain towns on the southern sea-board in communication with India, the Arabian coast of the Persian Gulf, and Mesopotamia, are liable to limited outbreaks of plague, but the country as a whole presents natural obstacles to the spread of that disease. None of the plague centres described in the past have shown signs of activity, and no new centres have appeared. Cholera, on the other hand, once introduced has been difficult to arrest, but again is not endemic. An imported case of cholera at Abadan gave rise to a local epidemic in 1924 which spread to Mesopotamia. This is the only instance, during the period under review, of an epidemic originating in Persian territory and spreading to a neighbouring country. Variola and typhus fever are endemic, and an extensive epidemic of the latter occurred in 1917–18 after a year of drought and famine. Relapsing fever became epidemic at the same time, and, as an occasional sporadic case is seen at long intervals, must be counted endemic.

Progress in sanitation has been made in the capital, and a public vaccination service for the greater part of the country, and now in its fourteenth year, has met with considerable success. The local preparation of vaccine lymph is a big step in advance.

Epizootic diseases have become a serious problem. Anthrax has long been known to exist and now the occurrence of cattle plague has been proved.

The abuse of opium has become very serious from the point of view of health.

Field games have been successfully introduced.

The public health is in the hands of young Persians with Western training, but no special qualifications for this kind of work. Their plans for an organised health service are praiseworthy, but are hampered by lack of funds and, above all, of properly trained medical officers. The quarantine service in the Persian Gulf is, however, well staffed and organised.

The Persian Government has uniformly done its best to give effect to the proposals made to it by its advisers and has fulfilled its international obligations. The population and the health services are, however, suffering from the failure to make radical changes in the organisation of the State Medical School and to make the teaching more practical and more modern.

## FRENCH DOCTORS AND THE FALLING FRANC.

THERE used to be an old saying that the only way to grow rich was to pay one's debts. This is true in the sense that no man is really rich so long as others have rights over his property. A writer in *Paris Médical*[1] now points out that this saying is, alas, no longer true in France. He who pays his debts in Paris to-day grows poorer, not richer. The man who paid his tailor's bill in September would have done better to put off paying it till December, when the rate of exchange and the corresponding value of the franc had fallen. This curious and unfortunate state of affairs has placed French doctors in an embarrassing situation. Formerly in reference to a code of elegant manners, it was not considered proper for a doctor to send in his bill before a decent period had elapsed after the consultation. Certain families, arbiters of punctilio, were outraged if he dared to present his account before three, four, or even five years had gone by. The price of politesse in those days, however, merely amounted to a few francs' interest lost, and that, we may suppose, was more than made up in increased prestige. But now the situation has completely changed. In little more than a year the £ has risen from 80 to 130 francs—that is, the franc has lost almost half its value. A doctor who, in January, 1925, might have bought himself a new suit with a patient's fee paid on the spot, could hardly buy himself a dinner with that same fee paid in January, 1926. Doctors are bad accountants, and it has taken some time for them to realise the situation. For months past their housekeepers have been asking for more and more money to pay for lettuces and cauliflowers, and they have grumbled a little at the high prices, but they have hardly given serious thought to what these rising prices really meant. Now things have reached such a pass that they are forced to face the situation. Doctors have stomachs, like their patients, and stomachs have certain definite functions to perform. Many French medical stomachs, accustomed to burgundy, have perforce now to be content with vin ordinaire. The only practical solution of this economic crisis, thinks the French writer, is to follow the example of many surgeons and specialists, and to ask boldly for payment of fees on the spot. This seems a sensible solution of the problem, and some doctors on this side of the Channel might be grateful if their French colleagues set the fashion of cash, not credit.

## THE TOILET OF THE MOUTH.

WE have received from Mr. E. M. Uncé, of 30, Swan-road, Harrogate, three articles for use in the toilet of the mouth which deserve trial. The first is a tooth-brush designed to clean the front and back surfaces of the teeth at the same operation and consists of two tooth-brushes with the face of the bristles opposed to each other, the handles being joined together with a U-shaped spring. Pressure put upon the spring regulates the distance between the two surfaces of the brushes between which the teeth pass as the brush is moved backwards and forwards or up and down. The second is an instrument for cleaning and massaging the gums, and consists of two small soft rubber rollers mounted on wire handles. The handles are so shaped that the rubber rollers can be made to press on the gums at any point as well as upon the roof of the mouth. The third article is a saline tooth-powder for employment with either the massage instrument or with the tooth-brushes, and is pleasant in use. The registered trade name of all three articles is "Gummette."

## NEW INFECTIOUS HOSPITAL FOR HULL.

THE Health Committee of Hull Corporation has approved plans for a new infectious hospital at Cottingham, which will cost £85,000. The medical officer states that Hull compares unfavourably with other large towns in regard to accommodation for infectious diseases. The number of beds normally provided at the City Hospital is 116, but there were recently 133, while the cubic feet per bed specified by the Ministry of Health would permit of only 56.

## WESTMINSTER HOSPITAL.

*To the Editor of* THE LANCET.

SIR,—I notice that in your issue of March 20th you state that the out-patient attendances at Westminster Hospital are 3·5 per cent. more than in 1922. This should read 35 per cent.; the correction makes the substantial increase in our out-patient work apparent. Your statement that subscriptions have increased by 58 per cent. and donations by nearly 100 per cent. may, perhaps, give a misleading impression of the financial position of the hospital. This statement was a quotation from the report made by Mr. E. H. Hoare, our treasurer, at the meeting of the quarterly board, and he went on to say that, although the public were showing their appreciation of our great work by increased support, yet that support was still quite inadequate to the greater needs of the hospital, as was evidenced by the fact that in 1025 there was a deficit of £2649.

I am, Sir, yours faithfully,
CHARLES M. POWER.
Secretary.
March 24th, 1926.

# Medical Diary.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, April 8th.—4 P.M., Dr. Cockayne: Bronchiectasis.

ANCOATS HOSPITAL POST-GRADUATE LECTURES.

THURSDAY, April 8th.—4.15 P.M., Dr. Langley: Diabetes in General Practice.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES POST-GRADUATE COURSE, Quay-street.

THURSDAY, April 8th.—4.30 P.M., Dr. Lancashire: Pus Coccal Infections of the Skin.

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[1] No. 4, 23 Janvier, 1926, p. 78.

# Lumleian Lectures
ON
# ENDOCARDITIS.

*The Second* Lumleian Lecture in 1926, delivered before the Royal College of Physicians of London on March 25th,*

By Sir THOMAS HORDER, Bart., K.C.V.O., M.D., F.R.C.P. Lond.,
PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

## Non-microbic Ætiological Factors in the Production of Endocarditis.—(*Cont.*)

### *Physical and Emotional Stress.*

But if we have been cavalier in our consideration of congenital defects and the anatomical strain which they impose upon these delicate structures, situate as they are at the very centre of the hydraulics of the circulation, may we not also have been somewhat cavalier in regard to strain of a functional kind? It has been the custom of late years to minimise the factor of physical and emotional stress in general in cardiovascular disease, and therefore it has been largely discounted in the production of endocardial changes. This is a material age, and we have become accustomed to discount *functional* elements in the ætiology of organic disease. We have been told that the healthy heart cannot be damaged by volitional effort. But whose heart is "healthy"? If a heart is found to be damaged after effort, then the onus of the damage is laid at the door of toxic agencies. But are we not all of us potentially, if not actually, "toxic"? And if this be so, does the doctrine of the heart's immunity from self-imposed strain carry any more practical application than that it is desirable, in order to reduce the effect of the strain to a minimum, that we should see to it that we are as little "toxic" as possible?

It is necessary to distinguish between sudden and occasional strain on the one hand and prolonged strain, on the other. There seems good reasons for believing that both physical and emotional strain, if prolonged, may lead to endocardial disease, both of the sclerosing variety and, with or without this, of the active bacterial type. Since prolonged strain is inseparable from fatigue, this element may also be included in this group of ætiological factors.

### *Fatigue.*

The recent experiences of those who have had charge of ex-soldiers suffering from endocarditis of the bacterial sort throws much light upon this matter. Reports concerning these cases are to hand from careful observers in nearly all the belligerent countries, but are not yet complete in many important points. So far as the observations go, however, we have strong confirmation of the view taken here. The cases reported have been almost entirely aortic in disposition, there has for the most part been no evidence of previous disease of the valves, and the type of soldier affected, and his war record, suggest strongly that the factor of strain has been considerable. In this country Starling and Carey Coombs have made memorable contributions on the subject. Starling, in a report on 52 cases of infective endocarditis in ex-soldiers, in half of which the disease was of the chronic type, says of them:—

> "The disease occurs in individuals of fine health and physique who have had little or no previous illness. The majority of those suffering from it have undergone a considerable degree of physical stress—e.g., those who were serving in the fighting line in the years 1916–17. The infection is primary in the endocardium. The post-mortem appearances show no evidence of previous rheumatic endocarditis."

Carey Coombs in his equally important paper is led to almost identical conclusions. He says, as the result of his analysis of 30 cases of post-war chronic endocarditis of the bacterial type—

> "The predisposition of the ex-soldier to endocarditis lenta is not due to infections of the heart prior to enlistment, since approximately four-fifths of the cases, even after the Ministry of Pensions had scrutinised their histories, failed to disclose any evidence of such infections. . . . The facts as to lesions and diseases contracted during service are, of course, open to the criticism that it is quite impossible to assess in figures the liability to injury of the various 'portals of entry' of infection; but it does seem reasonable *to conclude that the reason why soldiers have become* victims of endocardial infection does not lie in their liability to be invaded by micro-organisms through any particular tract. . . . There is, however, a very remarkable fact, only imperfectly presented by the statements, that 80 per cent. of the men were engaged in the more strenuous forms of military service and that the average duration of service was 3·05 years, or nearly three-fourths of the whole length of the war. The fact is one which is not susceptible of arithmetical statement. It is this, that almost without exception the men whose military service was followed by the development of endocarditis lenta were *men of fine* physique and morale; men who joined the army early, served with all their might, and exerted themselves to the utmost limit of their physical powers. . . . Looked at from the obverse side, the same fact is equally striking. At the bases and elsewhere, both at home and overseas, there were large numbers of men of indifferent physique serving in the army; yet I have not so far encountered a single example of chronic endocardial infection amongst such men."

Carey Coombs does not miss the obvious point that excessive *fatigue may predispose* the body to infection, and thinks a biochemical link between fatigue and infection may be suggested by Walker Hall's work on the effect of dilute acids in accelerating blood cultures *in nutrient broths.*

Strain and fatigue overlap with *arterio-sclerosis,* with which in most cases *hyperpiesia* goes hand in hand. Upon this factor in the production of chronic *endocardial disease I do* not propose to dwell.

I agree with Irving Simons, to whom we owe a masterly critical review of the whole subject of endocardial infections up to the year 1914, *that the* lesions occurring in the heart in cases of the so-called *cachexias* lack clinical significance, and are to be regarded rather as marantic thromboses than as true endocarditic manifestations. This statement refers to most of the positive post-mortem findings in cases of chronic nephritis, tuberculosis, cirrhosis of the liver, and carcinoma. They are to be distinguished, however, *from* cases of terminal septic endocarditis occurring in patients *suffering* from *these* same diseases, a class to which, in my original survey, I included in the "latent" group. Although they usually are *latent,* it would be better to call them "terminal," since the word latent is more properly used for those cases of chronic infection which only come under observation as the result of one of the *accidents incident to the* disease, and especially embolic infarction.

### Septic Endocarditis.

I now pass on to consider the large and important but heterogeneous group of cases of [illegible] variously termed "ulcerative," "malignant," "infec[illegible]tive," or "bacterial." The limits of [illegible] ill-defined. At one end of a possible [illegible] they may be placed the [illegible] group. Poynton and Paine [illegible] other workers, describe a [illegible] carditis, considering the [illegible] in their judgment a specific streptococcus (the *Diplococcus rheumaticus*), is responsible for such cases. At the other end of such a series are cases in which the endocardial lesions may be regarded as little more than intracardiac thrombosis occurring in the course of a pyæmia. The present nomenclature is avowedly very unsatisfactory. "Ulcerative" has the double objection that, even if we leave out of account for the moment Poynton and Paine's cases of malignant rheumatism, a process of ulceration occurs in severe forms of acute rheumatic endocarditis, as may be seen not infrequently in the post-mortem room, whereas by no means all cases of the bacterial group are associated with ulceration. Indeed, the absence of ulceration is an important feature in some of the more chronic cases. "Malignant" is an ugly and forbidding word to use, and however high the mortality in the fully-fledged cases within this group may be, some patients do certainly weather through. To both the words "infective" and "bacterial" the objection applies equally—that the rheumatic cases are presumably of this nature, despite our ignorance of the cause of the infection, and the syphilitic cases certainly are. The tendency during recent years to change the word "infective" for "bacterial" is curious, seeing that we have no knowledge of infections which are not bacterial. Beyond sharing the general dissatisfaction with any and all of these names, I am not anxious to introduce a new one. But I have a leaning towards a still older name than any of those now used, reactionary though it may sound to speak of "septic" endocarditis. The word commits us to nothing in regard to pathogenesis, yet is expressive of the main differential features between this form of endocarditis and the rheumatic and syphilitic forms. Irving Simons regards the term "septic" as unfortunate inasmuch as the lesions in many cases are not suppurative. But suppurative is by no means a necessary part either of acute or of chronic sepsis. Witness our use of the term in such conditions as "puerperal sepsis" and "focal sepsis"; in neither of these expressions does the word "sepsis" necessarily connote suppuration.

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* The first lecture appeared in The Lancet last week.

Unfortunately the confusion in words does not end here; confusion has of late years also invaded the terms by which we designate the type of disease as regards the intensity of the morbid processes involved and the duration of them. Although the words "acute" and "chronic," like a good many very common words, cannot be accurately defined, there is general consensus of ideas as to what they mean when applied to diseases. They are a convenient estimate of the two combined qualities already mentioned—intensity and duration. Now everybody seems agreed to the use of the word acute in relation to certain cases of bacterial infections of the type I am now discussing, but the cases that are not acute have been called "chronic," "subacute," and "slow" by different authors. As between "chronic" and "slow" there seems to be no difference. Schott Müller's account of the cases which he described under the name "endocarditis lenta," and which appeared in 1910, the year following the accounts contributed in this country by Osler and myself, makes it clear that he was dealing with the same kind of case which we called "chronic endocarditis." Individual cases of this chronic type had been described earlier, as by Bristowe, Lenhartz, and others. In the same year Libman introduced the term "subacute bacterial endocarditis," and by a rapid series of papers, embodying observations and reflections of fundamental importance, has succeeded in establishing this term, for a time, as synonymous with both the earlier names.

Most of those who have considered the matter, and have contributed to our increasing knowledge of the subject, fail to distinguish between the cases originally designated "chronic" and Libman's subacute cases. And so it comes to pass that these two terms are, for the most part, used indiscriminately. Strangely enough, if there is any tendency to make a distinction between these two terms it is to use Libman's new term for a class of case which, on analysis, seems to be of even slower development and less intense symptomatology than the class of cases formerly called chronic. I shall refer to this point again, because of its important bearings upon pathogenesis.

*Acute septic endocarditis* was recognised clearly by Wilks and others. Wilks introduced the excellent term "arterial pyæmia," and the words very aptly express the main features of the disease. Little or nothing has been added to our knowledge of this group of cases since Wilks's time. The heart and heart valves share in a general infection. The micro-organisms concerned are highly virulent in character: *Staphylococcus aureus*, *Streptococcus pyogenes* (*vel hæmolyticus*), the pneumococcus, and less often the gonococcus.

The onset of the disease is usually abrupt, the symptoms severe throughout, fever is high, rigors are common, and the course of the disease is rapid. A few doubtful recoveries occur. Death usually takes place in from ten days to a month, but there are fulminant cases which terminate in three or four days, and some, of less than the ordinary severity, which drag into the second month. The disease sometimes complicates osteomyelitis, erysipelas, pneumonia, and less often some other acute focal infections. I deal with it here thus briefly so as to give my groups of cases more clear definition.

### *Septic Endocarditis of the Right Side of the Heart.*

Amongst the cases of acute septic endocarditis which I have observed of late was one in which the tricuspid valve was affected, and this valve alone. Since I regard the case as presenting the clinical picture to be expected in this somewhat rare condition I will give a brief note of it.

A man aged 42 years was admitted to St. Bartholomew's Hospital on the sixteenth day of an acute illness which was ushered in by shivering and headache. The man was seen by his doctor on the second day of his illness and put to bed, where he had been ever since. He became delirious on the third day and was transferred to a nursing home. About this time a patch of pleuritic friction was noted near the region of the right nipple which disappeared in less than a week. There were no physical signs of pneumonia. The temperature chart, which was brought to the hospital with the patient, showed that there had been a fairly continued fever for four days after the record was begun, the temperature reaching 103–4° F. It fell, but not by crisis, on the eighth day of the illness, and remained nearly normal for three days. It then rose sharply, with a rigor, reaching 104–5°. The delirium, which had subsided with the defervescence of the fever, returned. There was no headache. From the twelfth to the sixteenth days there were daily rigors, with profuse sweats. On admission the patient was very ill, with low delirium, dry cough, and slight cyanosis. Examination of the chest yielded a soft systolic bruit near the apex, and a few rhonchi over both lungs. There was a leucocytosis of 10,800. A lumbar puncture gave normal fluid. A blood culture was sterile. Agglutination tests were negative. Complement-fixation test for T.B. was negative. There were no choroidal tubercles seen. No abnormal coliform organisms were found in the stools. The urine was sterile. The spleen was not palpable. No petechiæ were present. Rigors continued almost daily with high quotidian intermittent fever. On two separate occasions definite areas of crepitation, with soft pleuritic rub, were found, one in the right flank and one in the left axilla. There were no sputa. The frequency of the respirations was constantly raised. These, and the persistence of the apical systolic bruit, were the only physical signs elicited. Two further blood cultures were negative, but on the thirty-third day of the disease the blood yielded a growth of pneumococci. The patient, very ill at all times, died on the thirty-fifth day of his disease.

At the post-mortem examination recent vegetations of the septic type were found on the tricuspid valve, and both lungs contained recent infarcts. There was about a pint of blood-stained serous fluid in the right pleural cavity. This fluid and the heart's blood both showed pneumococci in film preparations.

The chief diagnostic features in a septic endocarditis of the right heart, whether tricuspid or pulmonary, is the association of the signs of endocarditis with multiple pulmonary infarction. The intensity and the duration of the disease process depend, as in left-sided cases, upon the virulence of the infecting microbe. The case just mentioned, being pneumococcal in nature, approximated to the acute forms of septic endocarditis. In a case which I included in my first series the micro-organism was a salivary type of streptococcus, and the infection was grafted upon a congenitally stenosed pulmonary orifice. The patient was a young adult, and her illness dated from the extraction of a septic tooth under local anæsthesia. In the first three months of her disease she had 22 attacks of pleurisy. Although she was known to be the subject of congenital heart disease of a mild type, the real nature of the disease was not recognised, and the repeated bouts of pleurisy, from which, however, she seemed to recover well, and a persistent pyrexia, led to her being sent to a tuberculosis sanatorium. Eventually her blood was cultivated and a streptococcus of the type *S. salivarius* was isolated. After an illness lasting for some nine months, and very thorough treatment, she recovered.

### *Intermediate Cases.*

Between this group of acute cases and the group of chronic septic cases which I shall take in more detail there occur cases which I originally termed "subacute"—that is, cases in which the onset was less abrupt, the symptoms less dramatic, and the course less rapid. The causative micro-organisms are less virulent; the gonococcus and the pneumococcus are found in them at times, but more often the cocci approximate to those found in the chronic cases. Those cases termed by Lenhartz and by Poynton and Paine "malignant rheumatism" are of this class. So also, quite frequently, are those young adults who give a clear history of rheumatic fever in childhood or in the teens, and who present clear signs of residual valvular disease. The duration of these cases is from about three to six months. In view of the present confusion in the use of the term "subacute," I think it better to give no name to this group, but to be content to regard them as an intermediate class between the acute and the chronic cases. In any individual case we may, if we feel unhappy without a label, strain a point and call it chronic.

## CHRONIC SEPTIC ENDOCARDITIS.

It is to the chronic cases, however, that much attention has been directed of late years, and deservedly so. The experience of the ex-soldier in this connexion is, given no other experience, very striking and very helpful in our understanding of endocardial diseases. But in civilian work also there is a growing recognition of the importance of these cases, and of the urgent necessity of detecting them as early in the course of the disease as possible. I shall deal with some of the main points of clinical interest as these have appealed to me, deferring matters of pathological importance until my next lecture.

Chronic septic endocarditis is a disease of adult life; its maximum incidence comes during the third and fourth decades. It is nearly twice as common in males as in females, a disproportion which exists quite independently of the war cases. It is a very insidious disease; it is not at present possible to estimate, except approximately, the date of its origin in the great majority of cases, nor, in those few cases in which we have good evidence of recovery, can we say when it ceased to be an active disease process. But allowing for these things, it is probable that the disease lasts on an average about six to nine months. Not a few cases reach 12 months; and there are reliable records of cases lasting two and two and a half years. Proofs are accumulating that there are recurring cases, also that spontaneous cures occur. Of these cases I shall say more later.

### *Pyrexia.*

The earliest symptoms of the disease are undoubtedly of the toxic kind. *Chills or sweats* are perhaps amongst the earliest recognisable symptom—but an accidentally discovered pyrexia, as following an influenza, frequently leads to observations that discover something seriously wrong in many of the cases. Pyrexia is almost always present at some time or other in the course of the disease. It has little or no recognisable features to guide us. It is rarely high. Apyrexial periods are not uncommon, even when the temperature is taken four-hourly, an important point in the general observations. Rigors are quite unusual.

Exacerbations in the pyrexia are often concomitant with embolic events and especially with embolism in branches of the splenic artery; the attendant peri-splenitis is probably the main source of the fever in this case. That the pyrexia frequently ranges higher with the occurrence of embolic infarction was pointed out by Douglas Powell in his Lumleian lectures in 1899 when he showed temperature charts illustrative of this fact. But I do not know that attention has been drawn to the fact that the pyrexia not seldom falls to a lower level after these exacerbations and remains there for several days. This is not the result of decreased ability to react to the toxæmia, because the patients often feel fitter during this period of lower pyrexia following an exacerbation. It certainly looks as though the mechanism of embolic infarction results in some instances in the manufacture of antibodies to the infecting agent. It would be interesting to examine the patient's blood for these substances by complement fixation or by other means after such a process, and compare the titre with that obtained at other times. I have wondered if the process of embolism in this disease is not sometimes of service to the patient as well as being, at other times, the direct cause of a tragic end. Provided the infecting microbe is not so pathogenic as to overthrow the local resistance altogether and lead to an abscess, which is rarely the case, and provided the embolus does not occur in a vital part like the brain—an all too common contingency—it is quite possible that the extraordinary slowness with which the disease sometimes progresses may in part be explained by such a view. I have been struck by the fact that in the two cases in which I have seen the largest spleens—in both the organ was visible on inspection of the abdomen and its lower border lay well below the umbilicus—the general condition of the patient was well maintained for months together. In one of these cases the spleen had increased so greatly in size during a stay of five months during the winter in the open air at the south of France, that on the patient's return I wondered if she had developed leukæmia. In the other case my opinion was asked because, though a diagnosis of septic endocarditis had been made provisionally, the very large size of the spleen had actually thrown doubt upon it. In this latter case the effect of splenic infarction, as estimated by attacks of pain in the upper and left side of the belly, was seen in striking fashion in the temperature curve, as also was the subsequent improvement in the general symptoms. Remissions in the disease are often attributed to some special line of treatment which is being pursued, such as the use of a vaccine. Before such a conclusion can be accepted it is important to inquire if the remission be not possibly correlated to splenic infarction.

### *Some other Symptoms.*

*Clubbing of the fingers* has, since Cotton's observations published in 1922, become a valuable help in diagnosis. This observer, working in Lewis's clinic, found that of 63 out of 798 cases of structural heart disease in pensioners in whom this sign was present, 44 proved to be cases of chronic septic endocarditis, and of the remaining 19 cases 4 were regarded as doubtful instances of the same disease. This observation has found corroboration from many sources. Starling thinks in the majority of cases the occurrence of clubbing indicates that the disease has been present for some time. It is clear that the association of this sign with acquired valvular disease must put us on our guard.

I referred in my original account of the disease to the frequency of *pains in or about the joints.* I do not think sufficient attention has been paid to these symptoms by subsequent writers. There is a point of great importance in connexion with the manner of their appearance, and that is their suddenness. A second important point is the difficulty that patients often have in locating them. And a third is the absence oft-times of any recognisable effusion when the affected part is a joint, so that I have sometimes spoken of these pains as being arthralgic rather than arthritic. The situations of these pains are very numerous; the regions of the foot and ankle are the most common, then perhaps the hip and shoulder. But the wrist, the back, and the sacrum are not uncommon. The abrupt onset of the pain, and the fact that in not a few cases critical examination discovers a dusky red patch of tender skin in the neighbourhood of the pain in those cases in which the affected part is not a deep structure, makes it probable that the origin of the event is embolic. Many of these pains, even if there be associated swelling, are of quite short duration, passing off completely and leaving no residue, either subjective or objective. In the investigation of a doubtful case, if no history of these pains be given by the patient, inquiry should be made, because it not seldom happens that the event has been considered of no special significance owing to its transient character.

The *ephemeral cutaneous nodes* of French physicians, now generally called after Osler because of the detailed description given of them by our late gifted and lamented colleague, have been proved to possess all the pathognomonic value which he attributed to them. I know of no feature in a suspected case which possesses such dire significance. Again, owing to their fleeting nature, inquiry should be made for these lesions if they are not present when the patient is first seen. No doubt they, too, own an embolic source. The most common situation for them is the pulp of the finger or toe. They also occur on the thenar and hypothenar eminence. I have described analogous lesions as occurring occasionally in the bed of the nails, where a thin splash of red may be seen, accompanied by exquisite tenderness if pressure be made upon the affected part. These nodes arise suddenly, with sharp pain, as though the finger has been pricked; indeed, patients often examine the part carefully to make sure that some sharp object, like a thorn or a splinter, has not been the cause of the sensation. One patient, a typist, found she could not use a particular finger for two or three days because of the tenderness caused by pressure on the keys of her instrument. A few hours after the onset of the pain an erythematous patch appears, pinkish at first, and later dusky red, with oft-times a centre of white skin rather suggestive of an urticarial wheal. There is usually slight swelling of the discoloured skin. The redness disappears, and the tenderness also, in about one to three or four days.

The presence of *petechiæ* in the skin is quite a different sign from that last described; though of much less diagnostic value, it is still very important. As I have pointed out, a favourite and early situation for these lesions is about the neck and clavicles; other common situations are the chest, forearms, legs, and buttocks. Needless to say, two or three scattered iæ may be very easily overlooked unless the possibility of their presence is specially borne in mind and the body is scoured for them in a good light. Like the nodes just referred to, these petechiæ are short-lived. They tend to appear in small crops. We have no proof that they are embolic in origin.

There is general agreement that a *leucocytosis*, at least of any considerable degree, is not a feature in these chronic cases. Indeed, the type of count is very apt to be round about 9000. In my second series of cases the actual figure averaged 9300. But a leucopenia is quite common. This contrasts markedly with the leucocyte count in the acute cases, in the second series of which the figure averaged 22,000.

The degree of *anæmia* varies much. It may be so great as to raise the question of pernicious anæmia, especially when a marked leucopenia is present. But the proportionate reduction in hæmoglobin seems to be invariably greater than the reduction in red cells. It is to be noted that some patients retain their blood, and especially their content of red cells, surprisingly well under treatment, especially if kept in the open air. I have seen an erythræmia in one well-marked case, but the hæmoglobin content was well below 100 per cent.

*Pallor of the skin* is a striking sign in the chronic cases, though if this be marked, and particularly if the curious tint of the complexion to which Libman has given the term café-au-lait be present, the case is generally of considerable standing. As in the case of the actual blood content, however, it is surprising how well some of these patients keep their complexion for a long time if treated in the open air.

### *Embolism.*

Next to the evidence of endocarditis, consideration of which I take later, embolism is undoubtedly the most constant of all the signs of the disease. It was recorded in 142 of my second series of 162 cases. The vessels affected were, in the order of frequency, those of the spleen (108 cases), the kidneys (98 cases), the brain (26 cases), and the arteries of the limbs (13 cases). To these situations must be added the retina and the skin. Embolism, or one of its sequels, is not infrequently the event which brings the patient under observation, and in many instances of apparently mysterious signs and symptoms it is this process which offers a satisfactory clue to the problem. Be it remembered that the size of the detached fragment of material may vary from something microscopic to something so large as to obstruct a vessel of considerable size.

1. The *spleen* is the most commonly affected of the internal organs. The more chronic the case the more common is it to find the spleen enlarged during life; indeed, it is probably correct to say that in chronic cases a palpable spleen is an invariable finding. Early in the disease, and when the organ is as yet not palpable, pains in the upper left quadrant of the belly, or hereabouts, are highly suggestive. These pains, associated with fever, and perhaps referred to the flank, are sometimes mistaken for pleurisy; when friction is present, as it may be, the error is difficult to avoid. But pleurisy may actually be present in addition. I have only once seen a pleurisy with effusion (which was aspirated) complicate splenic infarction. Although, as already mentioned, in some of the slow cases the size of the spleen may be very considerable, we must not conclude, from our knowledge of the great frequency of infarction in it, that this is the only factor in the enlargement. There is doubtless the general factor of toxæmia, and there is also the factor of anæmia. Unlike the spleen in acute septic endocarditis, the organ is generally quite firm, and the infected areas almost never suppurate; the nearest approach to this seen post mortem is some degree of grumous softening; even this is uncommon.

2. *Kidney.*—If we consider in connexion with this organ that the glomerular lesions which are so characteristic a feature are embolic in nature, a

they probably are, then it is likely that the kidney is affected by the embolic process quite as often as the spleen. The frequency of embolism here must not, as has often been pointed out, be judged only by the appearance of a hæmaturia; in many cases the number of red blood cells passed in the urine is so small as to call for microscopical search, and this should be undertaken very frequently. I have pointed out that a small hæmaturia may be missed, but a brief albuminuria consequent upon it may be detected; intermittent albuminuria should, therefore, suggest renal infarction just as intermittent hæmaturia does. The process of renal infarction is generally, but not always, painless. In one case under observation the renal emboli were accompanied by severe lumbar pain, so much so that calculus and tuberculosis were both suspected.

We owe especially to Gaskell and to Baehr our knowledge of the intimate changes in the kidney, only ascertainable by microscopical examination. These investigators described a form of glomerular change which they regard as peculiar, and to which Libman, in particular, has come to attach great significance. Indeed, according to the last-named observer, the discovery of the hyaline-like change in portions of the glomeruli which is the end stage in the Gaskell-Baehr type of nephritis enables us to say with confidence that an associated sclerotic heart-valve is the result of a "healed bacterial endocarditis." If this conclusion be borne out by other workers, and we may regard the lesion as almost a specific effect of septic endocarditis, its value in post-mortem interpretations will be very great.

3. *Brain.*—Cerebral embolism is by far the most serious of all the common events of this nature. It not infrequently brings a latent case very rudely into prominence; it often determines the fatal ending, and not seldom at a stage in the disease when, on all other counts, a hopeful period of quiescence has arrived in regard to the toxic process. Experiences like these it is which lead the physician to speak with caution even in the face of definite improvement in the general state, including quite lengthy periods of apyrexia. Death in this disease may be accidental and mechanical as well as the natural termination of an intractable toxæmia. The most common clinical result of cerebral embolism is hemiplegia, with aphasia if the hemiplegia be right-sided. Monoplegias are much less common. The resultant cerebral shock is usually considerable, and the outlook, even immediately, is grave. I have twice seen a second hemiplegia on the other side, the interval between the two attacks being in one case only three days, in the other case 12 months. The sequence, originally described by Douglas Powell, of hæmorrhage following the septic embolus, is common, as post-mortem experience shows, but acute cerebral softening, short of actual hæmorrhage, is perhaps quite as common a finding.

Irritative cerebral effects occur as well as paralytic, and these may sometimes be correlated post mortem with subarachnoid hæmorrhages. I found 10 such lesions recorded in 118 post-mortem examinations. In none of four cases in which choreiform movements were present was there, unfortunately, any opportunity for post-mortem examination.

4. Plugging of arteries in the *limbs* is probably more common than is thought. Unless the arteries be carefully examined a bout of pain and some swelling, say in the wrist and hand, or in the foot, is sometimes considered to be arthritic in nature, when it is really the result of embolism in the radial or one of the branches of the posterior tibial. That the arterial pulse is not often obstructed for long, and rarely completely obstructed, adds to the deception, since coldness of the part beyond the partial block, still less gangrene, does not occur. We must suppose that the absence of these last-named effects is due to the friability, not to say softness, of the embolus, allowing of rapid disintegration, or channelling or both. All this is in marked contrast with the results following embolism, if this takes place in (non-septic) mitral stenosis, when gangrene is not at all uncommon. A common sequel to these septic emboli in vessels in the limbs is *aneurysm*, the development of which helps to explain the absence of serious nutritional changes in the part supplied by the affected vessel.

I have twice seen *mesenteric embolism*. In one case there was an attack of abdominal pain, followed in three days by a swelling about the size of a golf ball and situate just to the right of the mesial line and a very little below the level of the navel. Despite the unusually discrete nature of the lump and its peculiar situation, the case would doubtless have been considered one of acute appendicitis had it not been that about the time of this occurrence the patient became suspect on the score of a possible septic endocarditis. A positive blood culture determined the diagnosis. In the other case a surgical colleague removed a small aneurysm from the right ulnar artery near its origin from the brachial. A routine digital examination of the rectum had discovered the presence of two small firm lumps, lying close together, and felt easily through the mucous membrane of the bowel. They were thought to be enlarged glands. A post-mortem examination later revealed the fact that these were healed aneurysms on the superior mesenteric artery. There was a third small aneurysm on the hepatic artery. Death had occurred from hæmorrhage into the cerebellum, no doubt secondary to another embolism in this situation. Aneurysm of the *ophthalmic artery* occurred in one of my cases and was observed conjointly with me by Foster Moore.

### *State of the Heart.*

The state of the heart in chronic septic endocarditis deserves a note. The salient feature, and one upon which there is general concurrence, is that it maintains its functional capacity in a very striking manner. Indeed, it may be said with truth that this is not a disease of the heart at all, but of the endocardium; hence my expression in my first lecture, "endocarditis vera." This fact contrasts markedly with the state of things seen in a rheumatic endocarditis, where, to a large extent, the converse applies. Many of the patients in the disease now under consideration enjoy complete cardiac sufficiency for months after they fall victims to their infection. This is no doubt the reason why so many of them do not come under our notice until long after the initial stage of the process is past. Soldiers remain in the firing line, doctors continue their arduous profession, farmers proceed with quite heavy labour, until one or other of the accidents of the disease leads them to report themselves. Even then it is often difficult to persuade them to consider themselves ill. This retention of cardiac efficiency, combined with that buoyancy and optimism which I have called "spes endocarditidis," renders these patients oft-times difficult to treat. A doctor, casually mentioning to his partner that he could not see the print on the extreme right side of his newspaper, submitted to a cursory examination; it was found that he had the cardiac signs of aortic incompetence and a retinal hæmorrhage; on fuller examination a diagnosis of septic endocarditis was not difficult. He refused treatment and carried on his work. A month later he attended a difficult confinement, using forceps. He woke the next morning to find himself hemiplegic, became comatose a week later, and died.

It is generally agreed that such evidences of heart failure as auricular fibrillation do not occur in these cases, another testimony to the same fact. This relative absence of myocardial involvement tends to persist to the last in many of the cases, though there is considerable divergence in the figures given by different authors as to the frequency of terminal heart failure. This divergence probably depends upon the fact that when small numbers of cases are dealt with the type of case which bulks most largely in the series from which the figures are calculated determines the figures. Taking my two series together, I found death with cardiac failure to occur in from 40 to 50 per cent. But both series contained a good many examples of the old rheumatic type of case. Yet in the groups which chiefly include ex-soldiers, death has been due to heart failure in much the same proportion as this; Cotton gives 47 per cent., and Starling gives 60 per cent., in their two series respectively.

Renal failure is admittedly the most frequent cause of death next to heart failure. After this, in probable order of frequency, come cerebral causes (and especially coma following embolus), exhaustion from the prolonged toxicity, and pneumonia.

# DIABETIC COMA WITHOUT ACETONURIA.

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THE following case of diabetic coma possesses some unusual features.

A youth, aged 21, who had been on insulin treatment since May, 1923, and whose symptoms were so severe as to necessitate three injections of 15 units daily in order to keep the blood-sugar approximately normal and the urine free from sugar and acetone, developed a severe gastro-enteritis on Oct. 1st, 1925. As a result of this he was unable to take food and, owing to a misunderstanding, insulin was also withheld. On Oct. 4th he had very severe abdominal pain which suggested to his medical attendant the onset of peritonitis. He was sent from the country to Manchester, a distance of 80 miles, where I examined him about 5 o'clock the same evening. During the journey he became unconscious, and when I saw him he was in typical diabetic coma with a feeble pulse of 128 and a temperature of 98° F. The heart sounds were very feeble, and he appeared to be dying. A specimen of urine was loaded with sugar, but no acetone bodies were present. There was also a faint cloud of albumin. 40 units of insulin were given immediately, and afterwards 20 units every three hours throughout the night. Lemonade containing glucose was given in unlimited amount. By next morning the patient had partially recovered consciousness, but the pulse was still 120 and very feeble. During that day 80 oz. of urine were passed, sugar being present in all specimens, but no acetone bodies. From that time 20 units of insulin four-hourly were given, this being reduced gradually to 15 units t.i.d. as the patient improved. The trace of albumin persisted for three or four days and then disappeared. At the end of four days the glucose lemonade was discontinued and a solid diet gradually substituted. Except for one day, throughout the illness there were no acetone bodies present in the urine and, on that one occasion, only the slightest trace could be detected by ferric chloride solution.

The patient made an uninterrupted recovery, and when seen recently had resumed the diet of approximately 2100 calories and had returned to the dose of insulin which he was taking before his illness. The urine was sugar-free and the fasting blood-sugar was 0·19 per cent.

The features of interest in this case are: (1) The onset of coma heralded by acute abdominal pain simulating peritonitis. (2) The treatment with large doses of insulin, together with an unlimited supply of glucose solution. This prevented the onset of hypoglycæmia, and probably with the aid of insulin was helpful in repleting the glycogen stores and thus preventing complete cardiac muscle failure. As the sugar-tolerance after the illness was the same as before, the large amount of sugar given did not appear to have done any damage to the pancreas. (3) The almost entire absence of acetone bodies is an unusual feature in a case of coma. Such cases have been recorded, but this absence has been attributed to renal failure. In this case, however, not only was there no inability to excrete sugar-containing urine in large quantities during the first week, but even when recovery had occurred and the kidney function was then presumably normal there was no excretion of accumulated acetone bodies. Here at least it is difficult to believe that the direct causation of coma could be attributed to them.

# A STUDY OF SOME ASPECTS OF MINERS' NYSTAGMUS.

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IN 1920 I was invited to become a member of the Miners' Nystagmus Research Committee of the Medical Research Council, and found it necessary to examine the whole of the existing evidence. There was a great deal of information, varying much in its value. Numerous papers had been published, and their contents accumulated without any very critical examination of the evidence contained in them. To get an insight into the conditions that prevailed it was necessary to read as much as possible of the writings of previous workers, to weigh the evidence as carefully and as dispassionately as possible, and to reinvestigate all the material which seemed of any real value.

Two different periods may be studied. The first ranges from 1870–1907, and the second from 1907 until the present time. In the epoch 1870–1907, Simeon Snell and Sir Josiah Court were the two principal writers in this country. In the evidence he gave before the Departmental Committee of 1907, Snell deals with the question of incapacity, his views being founded on over a thousand cases. He recognises a large incidence, but gives no statistics. In "Miners' Nystagmus," 1892, he deals with the result of examination of 134 cases, and dwells almost entirely on the causation. The evidence which Simeon Snell gave in the year 1907 may be epitomised as follows:—

> "Errors of refraction have no effect on miners' nystagmus. It is difficult to define which men of those who have marked oscillation are incapacitated; many are affected but not suffering. If miners' nystagmus is scheduled, a very large number of miners will seek compensation for slight amounts of miners' nystagmus, not severe enough to prevent them from working. It is very difficult to separate the genuine from the other cases. Probably a large proportion of miners will continue their work as they do now, and experience no pain or difficulty from the nystagmus; on the other hand, a large number of men who are able to do their work may seek compensation. Compensation will not be good from the men's point of view nor from the employers; it may throw so many men out of work and add enormously to the cost of coal-getting. A typical severe case of miners' nystagmus is fit for surface work in a few weeks, and fit for pit work eventually. I cannot remember ever meeting a miner who had given up work for nystagmus five or six years before and who had not resumed work below ground. I do not think a very great proportion of men are incapacitated by miners' nystagmus, only a small proportion; nor that it is a very great evil, but it may be considered so under compensation."

Sir Josiah Court, whose work has proved so remarkably accurate (1891), gives definite statistical information as to the incidence (see "Miners' Diseases"). In 1892 he examined the whole of the men, 735 in number, at two of the Stavely pits. Of these, 376 were actual coal-getters, of whom 45¾ per cent. had miners' nystagmus. Of stallmen in safety lamp pits generally he found about 40 per cent. had nystagmus, whereas of those in naked light pits only about 3 per cent. Sir Josiah Court in the same book (pp. 49 and 50) makes the following remark on incapacity:—

> "An Act of Parliament should be passed restricting the time for which compensation should be paid for miners' nystagmus to four months."

A careful study of the evidence given in 1907 brings many interesting details to light; for instance, it is interesting to read the evidence, medical and otherwise, given on behalf of the Lanarkshire Miners' Union, where, according to Dr. Freeland Fergus, miners' nystagmus now causes a lot of incapacity with loss of vision and other untoward results. Mr. R. Smillie, for the Lanarkshire Miners' Union, said:—

> "We have quite a number of miners' nystagmus cases in the 50 districts of Lanarkshire. Ophthalmic specialists

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[1] Stallmen are both the coal-getters, or hewers, and the fillers, who fill tubs with coal in the working-place or stall.

advise men not to go underground again after miners' nystagmus, but men do go back and have no relapse."

Dr. Andrew Bell, for the Scottish Miners' Federation, said:—

> "Miners' nystagmus is a small thing, and does not incapacitate materially for the work of coal-mining; it may incapacitate for a week or so in the most severe cases. Compensation is usually asked for a week or two and should only be granted on expert evidence that the men cannot work. When a great deal of subjective distress is present with a slight degree of nystagmus, the severity of the subjective symptoms would be due to something else apart from the nystagmus."

In this he was supported by other witnesses called by the Scottish Miners' Federation, and also those of the Northumberland Miners' Federation.

### *Investigations Abroad.*

In France and Belgium, Dransart and Romiée were the principal early writers. Dransart, in 1877, gave an excellent description of the condition, on which it would be hard to improve even to-day. The physical signs were all carefully recorded, while of the symptoms he says:—

> "When walking on the roads below ground all objects dance, so that walking is difficult, like that of a drunken man. At the coal face sight is soon completely befogged, and the miner goes on striking without seeing clearly; it is habit not sight which guides his pick. He looks down; his sight then rapidly returns and he resumes his work for a time Then he has to rest himself again, and so on"

Dransart describes the effect of alcohol, and finds that errors of refraction are of no importance in the production of miners' nystagmus. In 1882 he had seen more cases, the bulk of which had good visual acuity—i e., 50 per cent. had 6/6 and a further 25 per cent. had 6/9. He says:—

> "Miners' nystagmus lasts as long as the man continues his professional work. When he stops he is cured in from six weeks to six months time."

In 1913 he wrote again, classifying miners' nystagmus into three groups—mild, moderate, and severe. Of all cases 90 per cent. were mild. In mild cases the oscillation is only obvious when looking up in daylight; in the moderate form oscillation is obvious when looking at about the horizontal level in daylight; in the severe, it is obvious when looking at or below the horizontal level in daylight, and is accompanied by functional trouble. The field of vision is undamaged, as is colour vision; the visual acuity, diminished when oscillation is taking place, recovers fully as soon as the eyes are still. Any disturbance of the general health, any accident, alcoholic excess, or fatigue, may change the mild form of miners' nystagmus into a moderate or severe form.

Incidence: By examining all the miners as they left their work he found that from 12 to 20 per cent., according to the light employed, of the miners in the north of France were affected by miners' nystagmus—that is, 15,000 were affected. Of these, not more than 50 in any one year had the disorder in a severe form. He records a case of a doctor who could produce oscillation like that of miners' nystagmus. He estimates the duration of incapacity from the mine as from two to six months in severe cases. Miners' nystagmus itself may last nearly the whole of a miner's working life, either in the mild form or with an intensity which varies from the mild to the severe form, to return to the mild again. He had watched some of the cases for 30 years. Miners' nystagmus in the mild form, 90 per cent. of all cases, is compatible with excellent general health and perfect fitness for work.

### *Work of Romiée.*

Romiée, of Liege, examined a very large number of miners in the years 1877–78, and again in 1892. His work was particularly good. He was the first to examine large numbers of men as they left the pit and get the percentage of those affected, noting the particular work on which they were engaged, and the light with which they were working. He was, I believe, the first observer to get the true incidence of the disorder. He also examined the same collieries and many of the same miners a second time after an interval of several years, and tested the incidence again so as to compare it with his previous findings. He notes that miners with squint are not unduly affected by miners' nystagmus. Fatigue increases the physical signs; a good sleep decreases them. Visual acuity is normal except when oscillation is very marked.

He tested the light given by safety lamps, noted the diminution of light due to coal-dust on the lamps, and the reduction of illumination at the working place due to the necessity of putting the safety lamp, so that it should not be broken, much further from the work face than the candle or naked light. He judged the severity of any attack by the degree of elevation of the visual regard at which the oscillation commenced in daylight. He says:—

> "In very rare and temporary cases, defective sight due to the oscillation may make it impossible for a miner to work, and this may recur from time to time, though this does not keep a miner long away from the coal face, even though his eyes remain much as they were. When a miner cannot do his own work, a temporary change to other work, either in the pit or on the surface, is an excellent means of stopping the discomfort and curing the nystagmus The giddiness is not dangerous and it does not make miners fall or break their safety lamps.
>
> "The condition of a nystagmic miner at work, despite the little inconveniences which he experiences, is much the same as that of any other miner. The affliction is so well tolerated, even in the most pronounced cases, that a miner cannot be persuaded to remain under treatment for nystagmus alone. An ailment which only furnishes a rare example to medical view unless searched for cannot be considered *serious*. Miners whose nystagmus has slightly improved after a spell of surface work return to work at the coal face, and do not experience a return of the discomfort which made them stop underground work."

Pechdo, in 1893, struck by the much greater incidence of miners' nystagmus in safety-lamp pits, particularly in some of them, than in naked-light pits, came to the conclusion that poisoning by coal gas was the cause of miners' nystagmus.

### *Modern Writers.*

Of the modern writers Stassen, Ohm, Llewellyn, and Robson deserve consideration.

During the years 1914–19 Stassen ("La Fatigue de l'Appareil Visuel") made a most comprehensive investigation of the conditions under which miners' nystagmus developed in Belgium mines. He examined the entire personnel of several different mines, including zinc and iron mines. He made exact notes of the class of work done by the men examined, the depth of the seams worked, the thickness of the seam, and of the lights employed. He gives details of the examination of 11,170 miners employed in 10 different safety lamp mines, of whom 7025 had been examined both at the commencement and at the end of a shift of work. This was in addition to 80 workers in iron mines, three of whom had miners' nystagmus; 40 workers in two zinc mines, four of whom had miners' nystagmus; and 76 workmen in a naked-light coal mine, of whom 16 had nystagmus. He gives all conceivable information, with carefully worked out statistics of more than 13,000 men examined, and discusses almost every possible aspect of the question with great minuteness. The book is a perfect mine of information and should be read by everyone before taking part in any discussion on the subject.

Coppez has written an able book on nystagmus in which he gives valuable information on the subject of dark adaptation Ohm, of Germany, has written a good deal, his views on the duration of incapacity caused by miners' nystagmus agree with the views of modern continental experts, such as Stassen and Coppez. Very few miners stop underground work for more than three months on account of miners' nystagmus in the Bochum district of Germany. As regards the causation of miners' nystagmus, he maintains that the eyes are normally in a state of rhythmical movement, controlled by various stimuli received by the retina. After exposure to defective light for a considerable time, these rhythmical movements become coarser and slower, and can be recognised as oscillation of the eyes. As a Tyndall research scholar, Llewellyn measured the amount of illumination which fell on the coal face, and so confirmed the work of Romiée; he has since written a well-known book on the subject. Robson has taken quite extensive extracts from the work of Marie Stopes on the "Chemistry of Coal," but has produced no evidence, experimental or otherwise, as to the toxic gas which causes miners' nystagmus. Such a gas may exist, but mere assertion is not proof.

*Home Office Statistics.*—These are published every year, and give the fullest information as to the number of successful claims for compensation and the duration of these claims. It is well to note that at the end of 1921 more than 600 miners in this country had been in receipt of compensation for five years, and 59 for more than ten years.

### *The Ascertained Facts.*

What data can we obtain from these writings? The actual incidence of miners' nystagmus, as obtained in the only scientific way by examination of all the miners engaged in different pits, was very much greater in safety-lamp pits than in naked-light pits, Sir Josiah Court's figures being corroborated by all the continental observers. Roughly, 50 per cent. of all actual coal-getters had gross oscillation of the eyes visible in daylight. How many more would have had traces of oscillation if examined in a dark room after exercises we can only guess; probably, judging from my own experience, the percentage would have been considerable.

The evidence is also conclusive that miners in old days seldom stopped work for miners' nystagmus, and then only for a few weeks, or very exceptionally months, during which they worked on the surface. We must remember that in the period 1870–1907 the working hours were much longer, and the safety lamps gave less light than those now in use. On the other hand, there were more naked-light pits at that time and the average depth of the pits was less, although the ventilation was certainly worse than it is now.

What are the conditions to-day? (1907–1925). We have no recent British statistics as to the actual incidence of miners' nystagmus under post-war conditions, and this, I hope, will shortly be rectified; but from what evidence there is, it would seem that the true incidence rate is, if anything, less than it was. There has been a marked increase in the percentage incidence of claims for compensation for incapacity due to miners' nystagmus. This rose from 0·05 in 1908 to 0·42 in 1922 in this country, though there has been no corresponding increase in Belgium, France, or Germany.

The facts which emerge are these. Miners' nystagmus is found both in naked-light and in safety-lamp pits, whether coal, iron, or zinc, the incidence being far greater in safety-lamp pits. This is due either to the diminished light of safety lamps, or to the poisonous effect of some ingredient in the gas which necessitates the use of the safety-lamp. The worse the illumination at the coal face the greater is the incidence of miners' nystagmus. In naked-light pits, or even in zinc mines, cases of miners' nystagmus do occur. The more gassy the pit, the dirtier are the lamps and the less is the light given by them. Conversely, the worse the light the greater the impurity of the air.

What is the toxic ingredient of the gas found in the pits? Is carbon monoxide—the most toxic—the cause? Prof. J. S. Haldane (first report, Miners' Nystagmus Committee) has shown that insects without hæmoglobin can live for a prolonged period in 80 per cent. carbon monoxide. Logan and Glaister report many more cases of carbon monoxide poisoning in workers in lime quarries, gas-engine shops, &c., than in miners, with whom it generally seems to be the result of fighting a gob fire. Nothing in the least like miners' nystagmus occurs in carbon monoxide poisoning, so it is improbable that carbon monoxide is the cause of miners' nystagmus.

Are there any other non-explosive toxic gases in coal, zinc, and iron mines which, when inhaled in small quantities for a lengthy period, cause miners' nystagmus? It may be that there are, though so far no evidence has been produced to show that such a gas exists or can cause anything even remotely resembling miners' nystagmus. Congenital nystagmus, labyrinthine nystagmus, and nystagmus due to cerebellar lesions we know. Encephalitis lethargica does give rise to a form of nystagmus not unlike miners' nystagmus.

The first task I set myself was to reinvestigate the question of the influence of errors of refraction on miners' nystagmus. For this purpose I examined just over 100 consecutive cases of miners as soon as possible after they had been certified to be incapacitated by miners' nystagmus. This, besides giving valuable evidence of the unimportance of errors of refraction in miners' nystagmus, also showed that there was a considerable variation in the severity of the attacks for which certificates of disablement were given. This necessitated an attempt to classify the severity of the attacks. That was my next task.

A visit to Strassen and Coppez in Belgium, and letters to Ohm in Germany, confirmed the opinion I had formed that in Belgium and Germany miners do not now stop away from work either on the surface or below ground nearly so long as the British miners do. I came to the conclusion that this was not because the incidence of miners' nystagmus is less severe in Belgium than it is here, but because the determination of the incapacity is entirely in independent medical hands in Belgium, and also because the work selected by the Government medical expert for each man is immediately available for him. Information received from Germany and France shows that miners' nystagmus is about as prevalent there as it is in Belgium, and that the duration of incapacity is much the same. The method of dealing with it is also very similar.

### *Summary.*

1. The actual incidence of miners' nystagmus among miners examined at work was the same, during the period 1870–1907, in France, Belgium, and Great Britain. 2. The incidence of incapacity due to it was also the same in this period, 1870–1907, in all these countries, and was very slight and of short duration. 3. Since then the claims for compensation for incapacity due to miners' nystagmus have increased, both in this country and on the continent; but in this country the number of new claims has increased very much more in proportion, and the duration of the period for which compensation for incapacity has been claimed is far greater in this country than in Belgium, France, or Germany. 4. In American coal-mines little is known or heard of miners' nystagmus, or of any incapacity being caused by it. 5. In this country there is a wide divergence in the severity of the miners' nystagmus for which compensation is claimed.[2] 6. By far the greater number of observers, particularly of those who have made an extensive examination of large numbers of men at work, are agreed that those miners are most affected who work in the poorest light, and they attribute the condition to working in defective light. 7. Prof. Haldane, who has an unrivalled experience of the conditions of coal-mining, declares that the incidence of carbon monoxide in coal-mines is not greater than it is in many large towns where coal is being burnt. Moreover, he has shown that carbon monoxide is not a tissue poison except from its effect on hæmoglobin.

The increase in the incidence of claims for compensation for miners' nystagmus, and of the duration of those claims as compared with that which prevailed in this country during the period 1870–1907, and prevails now on the continent, would seem to be due to claims for incapacity not being decided by a few picked medical experts as on the continent. As a result confusion has arisen between a condition due to miners' nystagmus and a condition which is the result of a subconscious desire for unearned pecuniary gain, which is found not only in miners suffering from nystagmus or injury to their eyes, but in many other claimants for compensation for injury to eyes, &c.; in members of the general public—e.g., "railway spine and shell shock"; and among those who claim to receive the Old Age Pension before they attain the age of 70, giving defective eyesight as their reason. The remedy is obvious.

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[2] See second report, Miners' Nystagmus Committee, pp. 18–21.

Reinvestigation, so far as I have gone at present, confirms the views expressed by the earlier writers—Sir Josiah Court, Simeon Snell, Romiée, Dransart, and of the more recent ones—e.g., Stassen, Coppez, and Ohm—as to the physical signs of the disorder, the effect of errors of refraction and the amount of incapacity caused by it. Its cause I still regard as unsettled, the existing evidence is strongly in favour of its being a compensatory effort on the part of the central nervous system to overcome the effect of working in defective light.

### *Further Research.*

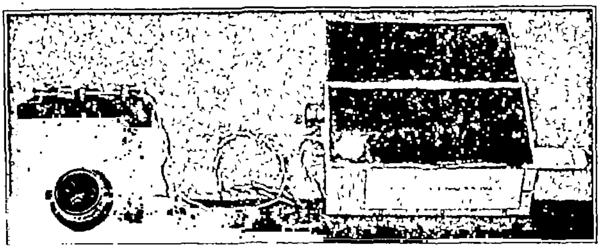
When these conclusions had been reached there were two factors which particularly invited fresh investigation. The first was the behaviour of the eye under conditions of dark adaptation; the second, for reinvestigation, was the incidence of miners' nystagmus in different pits under different conditions.

The first required a good deal of preliminary work. It is obvious to everyone that as daylight fails the differentiation of colours in a landscape, so infinitely varied in bright sunshine, becomes less and less marked until by moonlight everything is almost the same colour, and by starlight only the outline of objects can be detected in the shades of black and white.

After many experiments which failed to satisfy me I evolved the following scheme:—

I got a box about one foot long, lined its interior with black velvet, fixed a standard one-candle power lamp at one end of it (Fig. 1), and made an aperture at the other through which a slender beam of light could be projected across an otherwise absolutely dark room on to a black cloth covering a shelf on which test objects could be placed. The brightness of the illumination was checked by a luxometer (Edgcumbe and Everett) at the point of examination or at some known fraction of the distance in the case of feebler illuminations. Three observations were taken by each of two observers. The lamp in the luxometer and the lamp used to give the beam of light being exactly similar, it was easy to measure the light. For test objects I employed wooden cubes, 2, 4, and 6 cm., on which could be pasted paper of various colours, or black or white paper with the test letters of Snellens' type. The letters were spaced at measured intervals. To ensure that the test objects were at a uniform distance from the eye, I got a wooden frame made which was part of a circle with a radius of one foot, into which was set a straight piece like the spoke of a wheel, so that when the free end of the spoke was place against the observer's face just below the eye he was using, his eye was equidistant from each part of the circle (Fig. 2). It was covered with a black cloth when in use. I also had a slot fixed in the box which contained the lamp, so that dark glasses of various kinds could be fitted over the aperture in the box in such a way that the beam of light had to pass through them.

FIG. 1.



The apparatus used for projecting a beam of light.

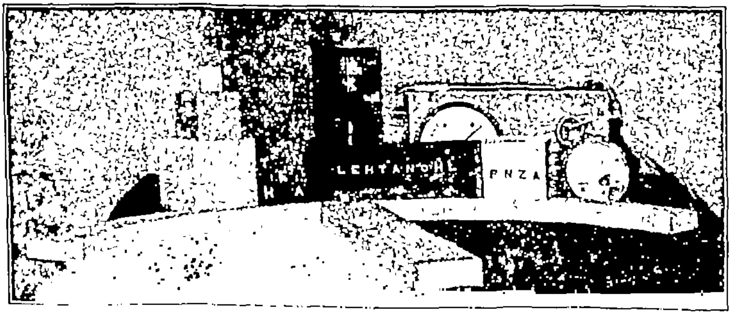
### *Experimental Results.*

By employing this apparatus I obtained the following results, taking the average of several readings by different observers, all of whom had been 30 minutes in a dark room before observations were made. With an illumination which varied from 4 candle-power to 0·0006 candle power:—

1. With 0·085 foot candle, Sn 0·6 was read at the centre or point of fixation and up to an angle of 1° from it; Sn 0·9 was read at the point of fixation and up to 2·5° from it; Sn 1·5 was read at fixation and up to 3·5° from it. The field of vision appeared to be evenly illuminated. Visual acuity was brightest in the centre of the field. This central area extends to from 1° to 1·5° from the fixation-point, and is surrounded by a zone in which the light flickers; this extends from the margin of the central zone for a distance of from 2° to 3° from the centre in different observers—i.e., the central zone has a radius which subtends an angle of 1° to 1·5°, and the second zone a breadth of 1° to 1·5° beyond it.

2. With 0·02 foot candle, colours—e.g., red, green, and blue—were easily seen, central fixation was easily maintained, and no flickering or fatigue was noticed. Sn 0·9 could be read at the point of fixation. Sn 1·5 at the point of fixation and up to an angle of 1·5° from this.

FIG. 2.



Test objects and wooden frame.

3. With 0·01 foot candle, a few letters of Sn 1·8 could be seen. Sn 2·1 could be read imperfectly, and Sn 2·6 read correctly. Two observers saw better at the point of fixation than elsewhere; the third observer better at a spot 4° from the centre. The legibility of type was greater at the centre and at 4° from the centre than elsewhere.

4. With 0·005 foot candle, Sn 3·6 could be read. One observer saw best at the point of fixation, one especially well *from the point of fixation to 4° from it.* The third saw best at 4° from the point of fixation.

5. With 0·0036 foot candle, Sn 4·8 and 3·6 were partly read by *all three observers, two of whom saw equally well* at the point of fixation and at 4° from it, while one saw better at 1° from the point of fixation on the temporal side than at *the point itself.*

6. With 0·002 foot candle, a central scotoma was clearly manifest; Sn 4 was read most clearly at 2° from the fixation-point, above, below, and to the inner side of it, and from 2° to 4° to 4½° on the temporal side of it. Central letters were just visible beyond 4½° on the temporal side, but not legible; at 10° letters were visible but only occasionally legible.

7. With 0·0012 foot candle, Sn 4·8 was read. Colours were just distinguishable, visual acuity was sharpest in a zone from 2° to 7° to the temporal side of the point of fixation. Colour vision, also form vision, soon faded as the test object *was moved beyond 7° from the centre.* Central fatigue was very marked; anything stared at became very indistinct; flickering was noted, shadows formed and crossed the visual field. Binocular vision was much better than monocular.

8. With 0·0006 foot candle there was a very definite central scotoma involving the whole central area with a radius of 5°. The centre and two adjacent letters of Sn 4 faded; next the whole field faded and then returned, including the central letters. This was followed by flickering, the central letter faded, and then the next two; they came back, but the central letter did not. When first a light of 0·0006 was turned on all the letters of Sn 4 were visible; a central scotoma formed in six seconds to two observers, and in 14 seconds to a third (an average of three observations each). The scotoma increased in size in 8, 12, and 23 seconds respectively to the three different observers. Letters became visible again in from 45 to 65 seconds; this was then followed by the stage of flickering and the reformation of the scotoma. In this test the letters subtended an angle of about 1°, they were white on a black background; red and green squares could be detected easily by simultaneous contrast. Fixation was hard to maintain.

9. With 0·0001 foot candle, a one-eyed man who had lost the sight of one eye in infancy was tried; *after adaptation for* 30 minutes, visual acuity was Sn 4; red was accurately distinguished, also green and yellow; visual acuity was most accurate at 5° and 12° on the temporal side of the point of fixation. The point of fixation faded, and the letters at 2° from the point of fixation faded even more quickly; he had a ring scotoma extending to 2° from the fixation-point. His field of vision extended to 20° on the temporal side and 10° on the nasal side. With him, as with other observers, there were two clear zones on the temporal side of fixation, the first at 5° to 7° from it, and the second at 12°, with a relative scotoma between them. With the one-eyed observer the letter C appeared to rotate clockwise in this dim light. Other observers noticed a movement of the letters which jumped in and out of the line. Flicker and fatigue were quite marked.

10. With 0·0006 foot candle, Sn 24 was read with binocular vision. One observer could distinguish red from green correctly by simultaneous contrast. The best visual acuity was at 5° on the temporal side of the point of fixation. Beyond 20° to 30°, even on the temporal side, a large white square subtending 8° was not seen. The central scotoma was very marked; moving objects were more distinctly seen than stationary ones; fatigue was very marked, and the observer's eyes were very uncomfortable.

Experiments were made by interrupting the main light and by flashing another light at an angle of about 40° to the line of visual regard. These caused a marked increase in the feeling of fatigue, but nothing else was observed. For comparison it may be noted that the light of the full moon was 0·05 by the photometer.

These experiments show that in very dim light there is a relative central scotoma with a ring of clear vision round it, with a restriction of the peripheral field of form vision. In addition to an increased difficulty in maintaining fixation, there is a tendency for fixed objects to move in a circle.

With 15 foot candle-power, Sn 0·3 was clearly legible; Sn 0·6 was clearly legible at the point of fixation and up to 3° *on the temporal side of fixation*; Sn 0·9 *was clearly legible* at the point of fixation and up to 4° of the temporal side of fixation; and Sn 1·5 was clearly legible at the point of *fixation* and up to 6° *on the temporal side of fixation.* 1 mm. squares of red and green could be clearly seen up to 7° or 8° respectively from the point of fixation.

The experiments were then repeated with the following results. With a reduction in the intensity of illumination :—

With 0·085 candle-power Sn 0·6 could be read and up to 1° from it; Sn 0·9 up to 2° from it; and Sn 1·5 up to 3° from it.

With this amount of light the visual field is fairly even; the centre is the best.

With 0·02 candle-power, Sn 1·5 was visible at the point of fixation, and up to 2½° from it. Central vision is the best.

With 0·01 candle-power, Sn 2·6 was read at the point of fixation and at 4° to the temporal side of it. In various observers these two points vary in intensity, being nearly equal. At 2° from the centre letters are not well seen.

With 0·005 candle-power, Sn 3·6 was read equally at the point of fixation, and at 4° on the temporal side of it.

With 0·0035 candle-power, Sn 4·8 was read rather better at 4° on the temporal side than at the point of fixation, but fairly evenly.

With 0·002 candle-power, Sn 4 was read most clearly at 2° *above, below, and to the inner side, and from* 2° to 4° on the temporal side. Central scotoma was quite marked. Letters beyond 4° visible, but not legible up to 10°. A letter was occasionally legible up to 10°.

### *Some Conclusions.*

These experiments show that the centre of the macula is the most sensitive spot for form and for *colour vision in bright light, but as the intensity* of the light diminishes the central area in the macula becomes both absolutely and relatively less sensitive to form vision than the area at the periphery of the macula and the adjacent part of the retina. The periphery of the retina appears to be relatively very insensitive to form vision, no matter what the intensity of the illumination may be, or whether the eye be light or dark adapted.

The threshold point of illumination at which the central area begins to lose its supremacy is between 0·003 candle-power and 0·002 candle-power. When the illumination is below 0·002 candle-power the scotoma is increasingly marked and the most sensitive part of the visual field is a signet ring-shaped area surrounding the macula at about an angle of 2° with an extension to 4° at the temporal side. The feebler the illumination the greater is the difficulty in maintaining strict fixation. The eye tends to travel in a small area all round the object it is fixing. This becomes exaggerated into something very like a vertical and even a rotatory nystagmus at times.

The arrangement of the different varieties of cones in the retina may account for the phenomena we have noticed. The following account, by Saltzmann, may be of assistance :—

> The central area of the macula contains very slender cones with an inner member 2·5 μ thick, irregularly arranged. These are found nowhere else. They are more slender than the other cones and might be taken for rods were it not for the absence of visual purple. Beyond this area the rods become more and more numerous and the cones wider apart, until some three or four circles of rods intervene between the two cones. This distribution is attained some 4 or 5 mm. from the centre of the fovea and is maintained quite constantly to the periphery. In the most extreme periphery the cones are again relatively increased. The foveal area, about 0·5 mm. in diameter, contains only cones. Towards the border of this area the cones are notably thicker and are *arranged in oblique rows.*

I am continuing my experiments on this subject, which I hope to elucidate *still* more fully. I am very much indebted to Dr. A. B. Nutt, for the very valuable assistance he has given me throughout this research, and also to Mr. Thompson, of Messrs. Theodore Hamblin, Ltd., for his valuable assistance with the apparatus.

I have not appended a bibliography. If this is required it will be found in the first report of the Miners' Nystagmus Committee. Some very interesting papers on dark adaptation by Selig Hecht have appeared in the *Journal of General Physiology.*

# A NEW DEVELOPMENT IN RADIUM THERAPY.

## THE APPLICATION OF THE LATER DISINTEGRATION PRODUCTS OF RADIUM TO THE TREATMENT OF CERTAIN SKIN CONDITIONS.

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AND
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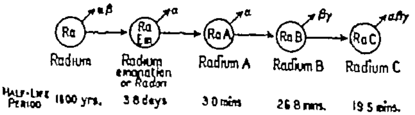
As indicated in a communication to THE LANCET,[1] we have been able to extend the usefulness of radium by employing it at a stage in its disintegration, at which hitherto it has not been applied to medical treatment. The particular *radio-elements* concerned have not previously been used therapeutically, and a definitely encouraging measure of success has attended their use in certain skin conditions. The discovery will be of special interest to radium institutes and other hospitals possessing radium, as it finds a permanent use for otherwise valueless products, and so extends the range of radium treatment.

It is usual to speak of the therapeutic effects of radium, but the actual element itself is of no value. Only when the radium breaks down do its special powers become apparent. The atoms of radium are constantly changing into other atoms, and a series of radio-elements is thereby brought into being. At each stage of the disintegration energy is evolved, and it is this energy which is employed in medical practice. The energy forms are three in number:—

1. *Alpha Rays* (α).—Fast moving atoms of helium.
2. *Beta Rays* (β).—Particles of negative electricity ejected from the disintegrating atom, with high velocities.
3. *Gamma Rays* (γ).—Non-material pulses in the ether, analogous to X rays, but of greater penetrative power.

All three kinds of rays possess definite powers of affecting the development and life of living cells, but the alpha rays have so slight penetration that they are of little or no therapeutic value, and as usually employed, radium owes its therapeutic powers to the beta and gamma rays. These are evolved during the third and fourth stages of the disintegration as shown in Fig. 1.

FIG. 1.

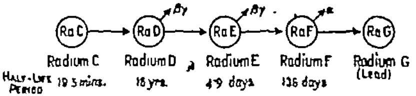


### *Active Deposit of Rapid Change.*

The radio-elements shown constitute the active deposit of rapid change and the longevity of the various elements is indicated by the time taken to decline to half. As generally used in medicine, the actual radio-elements *employed* are radium B and radium C, and the actual rays, the beta and gamma rays of these elements. This is true whether an active salt of radium is employed, or whether the emanation, the first disintegration product, is used. If a radium salt is used, an equilibrium is established among the various products, and owing to the long life of radium the strength of a radium plaque is, ordinarily [illegible] constant. But if a tube of emanation is the source of the activity, the tube gradually loses its power according as the emanation declines, and with it the radium B and radium C. Shortly after all the emanation in the tube has disintegrated, there is no radium B or radium C left, and therefore the tube has lost its strength. In radium institutes and hospitals *employing emanation* such *finished* emanation tubes have hitherto been of no medical use.

But it is well known that while radium C is the last member of the series to have powerful effects, the series does not end there. The subsequent elements constitute the active deposit of slow change and are shown in Fig. 2.

FIG. 2.



### *Active Deposit of Slow Change.*

It will be observed that radium D and radium E emit both beta and gamma rays, but unlike those from radium B and radium C, these are soft and possess little penetrative power. Hence, although after the decline of radium C in the emanation tubes, radium D and the subsequent elements grow up, the residual activity has not until now been considered of any value, and the finished emanation tubes therefore have been counted waste.

It occurred to one of us, however, that although the rays from radium D and radium E are feeble, yet if these radio-elements were concentrated from the finished emanation tubes, their activity might find use in medical treatment where deep penetration was not necessary, and owing to the long life of radium D supply a fairly lasting source of radiation. In particular it was thought that such a strong preparation of radium D and radium E in equilibrium might prove of value in the treatment of some superficial skin diseases. This conjecture has proved on investigation to be justified, and encouraging clinical results have been obtained.

Our

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[1] THE LANCET, Feb. 9th, 1924; see also [illegible] 1924.

different sizes and shapes to suit different situations. They were thin enough—generally 0·2 to 0·4 mm.—to permit of slight moulding and adjustment to the skin surface. Most were of an oval shape, from 10 to 12 sq. cm. in area, and had the active matter present as sulphides along with lead (see "Preparation of Applicators" below). In fixing the active powder to the applicator the powder was uniformly distributed over the metal, then moistened with chloroform, and a very thin coating given of a celluloid varnish made up as follows: solution of celluloid in amyl acetate, ⅛ oz.; acetone, ¾ oz.; acetic acid, ¼ oz.; acetic ether, ⅛ oz. The active side of the applicator was covered with a layer of crêpe-de-chine to protect the active matter from contamination and from moisture. The applicator was then fixed over the affected area with zinc plaster, and the patient instructed to keep it perfectly dry.

In every case the applicator was removed after a decided erythematous reaction was produced, and, if necessary, applied to the same area in about four to six weeks time, after all trace of the previous reaction had disappeared. Occasionally slight blistering was produced, necessitating dressing the part with boric ointment. In one case a very marked crusted reaction was produced after 17 days' application. From our experience blistering should be avoided. Good results are likely to be obtained if the applicator is worn only long enough to produce a mild erythematous reaction.

### *Case Records and Results.*

CASE 1.—Miss M., aged 25. Port-wine nævus of the left cheek and chin, colour rather bright red. Five applications were given, but as this was one of the early cases treated the first two were tentative and were not of sufficient duration to produce the required reaction (Figs. 3 and 4). The actual facial appearance is even better than the photograph indicates.

CASE 2.—D. T., girl, aged 7. Extensive and somewhat patchy capillary nævus of right cheek, extending up to and over right eyebrow. The patchy portions were about the size of a threepenny piece, bright red in colour with well-defined spider nævi portions between. The skin on the areas treated became soft and white. Treatment in this case was done slowly and covered a period of two years, and the parents were very pleased with the result.

CASE 3.—Miss H., aged 16. A red capillary nævus of port-wine type over left jaw and cheek. Four applications were made. The condition has responded and shows much improvement, but the result has not been so striking as in the other cases owing to a mild degree of pigmentation resulting. One application in this case was overdone, producing a definite crusted reaction, which may account for the pigmentation.

CASE 4.—Baby L., aged 12 months. A circumscribed nævus of mixed type on abdomen; it had previously ulcerated in the centre, which accounts for a central scar present. The nævus was the size of a two-shilling piece, strawberry red in colour, and elevated above the skin by one-eighth of an inch. After two applications the nævus had completely flattened down and the colour faded to a faint bluish tinge. Slight pigmentation outside the area treated has in this case also followed a somewhat overlong exposure, but this it is expected will gradually disappear.

CASE 5.—Baby R., aged 6 months. A small capillary nævus on point of left shoulder, about size of a shilling, strawberry red colour, elevated above skin by one-sixteenth of an inch or more. With one application there was immediate improvement.

CASE 6.—Miss G., aged 28. Lupus erythematosus. This was an extensive chronic case involving a large area of forehead, nose, and part of one cheek. All precautions had been previously taken to eliminate any source of focal infection; septic tonsils had been removed and decayed teeth extracted many months before, without any apparent change. There was no evidence of tuberculosis. Treatment was confined to the patch on the forehead and to the cheek. Reaction to the treatment was marked, blistering being noticeable. The result is a very marked scarring over the central portions of the lesions, and this scarring has remained for over a year. Difficulty, however, was experienced in arresting the slow spread at the margin. The disease still remains active in parts, but there is apparently a definite arrest with marked scar formation over most of the treated portions.

We consider the results very encouraging. The parents of the infants all expressed themselves as greatly pleased with the results produced, and the adult cases were so satisfied with the improvement that they were most anxious to continue the treatment to include all the affected areas, in spite of the inconvenience of wearing the applicators on the face.

### *Extraction of Radium D and Radium E.*

As the result of some ten years' use of radium emanation by the Glasgow infirmaries and hospitals under the auspices of the Glasgow and West of Scotland Radium Committee, more than a kilogramme of finished emanation tubes of various shapes and sizes had been collected in the laboratory at Glasgow University. These tubes were the source of the radium D and E used in the research. The radium D and radium E, it will be understood, formed a sub-metallic deposit on the inside of the finished emanation tubes. Most of this deposit is soluble in fairly strong hydrochloric or nitric acid, but, possibly owing to the recoil and bombardment which had taken place inside the tubes during the disintegration, the active matter is slightly embedded in the glass and its solution is not easily effected. The following table shows the solvent power of various acids under different conditions.

*Solvent Action of Various Acids on Deposit of Radium D and Radium E in Emanation Tubes.*

| Acid. | Treatment. | Percentage strength dissolved out. |
|---|---|---|
| 50 % hydrochloric .. | Boiling for 5 hours. | 83·1 |
| | ,, 10 ,, | 83·4 |
| 50 % nitric .. .. | ,, 5 ,, | 82·9 |
| | ,, 10 ,, | 83·0 |
| Conc. hydrochloric .. | ,, 5 ,, | 82·0 |
| | ,, 10 ,, | 83·6 |
| Conc. nitric .. .. | ,, 5 ,, | 83·4 |
| | ,, 10 ,, | 83·4 |
| Aqua regia .. .. | In cold for 3 days. | 73·5 |
| | Boiling for 5 hours. | 86·8 |
| | ,, 10 ,, | 88·5 |
| | ,, 20 ,, | 90·4 |
| | ,, 40 ,, | 92·4 |

Aqua regia (4 parts of conc. hydrochloric acid to 1 part conc. nitric acid) is the best solvent to employ, and fairly prolonged boiling is necessary to effect the maximum solution. In none of the extractions was it possible to extract more than 93 per cent. of the activity, as judged by a beta ray electroscope. Experiments were made to determine if this residual 6 or 7 per cent. activity could be removed, and it was found that this could be done by shaking the tubes with dilute hydrofluoric acid, which, of course, would dissolve some of the glass. This showed that some of the active matter is actually in the glass; but the small quantity is not worth the effort required to obtain it.

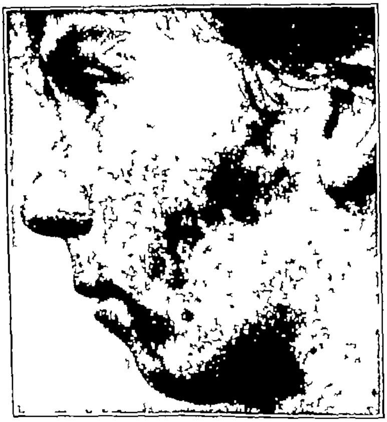
In extracting, therefore, it is recommended to use aqua regia, and to keep this at boiling point for a day or two on a sand bath. The tubes need only be broken, not powdered. Even on a sand bath very bad "bumping" will be experienced, and it was found necessary to employ a long upright condensing tube with ground-tapered end fitting into the ground end of the flask, and to clamp both firmly.

*Further Treatment.*—The strong acid solution is removed by decanting, and the tubes well washed with hot water, the washings being added to the extract. This is boiled down to quite small bulk, when an extra quantity of concentrated nitric acid is added, after which the solution is evaporated down on a water bath practically to dryness. Depending on the particular kind of applicator desired, as suggested below, this evaporation would be continued to as near dryness as is safely possible, with the subsequent addition of boiling water to any required dilution, or the slight acidity remaining would be neutralised with ammonia before diluting. It will be found convenient to handle about 40 or 50 g. of tubes at a time, and this quantity may be expected to furnish sufficient activity for four to eight applicators, according to what strength of these is desired.

### Preparation of Applicators

When the active matter is obtained in solution it is necessary to fix it in some way for medical application, since the quantity is so small that it cannot be handled by itself The most direct way is to associate it with some substance and apply this activated material to the diseased area, but, owing to the screening effect of this substance, some of the strength of the radium D and E is lost Therefore to make the most powerful applicators, radium D and E must be obtained alone and unassociated This may be done by taking the acid extract to perfect dryness in a platinum basin over a water bath, and most carefully dissolving off the invisible film with hot water, which gives a neutral solution containing nothing but radium D and E The quantity of this solution required to give the desired strength may be evaporated, portion by portion in the actual applicator, and the deposited matter protected by a thin film of collodion. By this method powerful applicators may be obtained, which will produce a reaction after only two or three days exposure

FIG 3



Port-wine nævus. Before treatment.

Such applicators have the disadvantage of containing no visible material and much of the active matter is apt to be worn off without attracting notice For these reasons it is suggested that the active matter in general should be associated with a quantity of some ordinary substance, so small as not to screen too much of the radiation, and yet sufficiently perceptible to permit safe handling of the applicators.

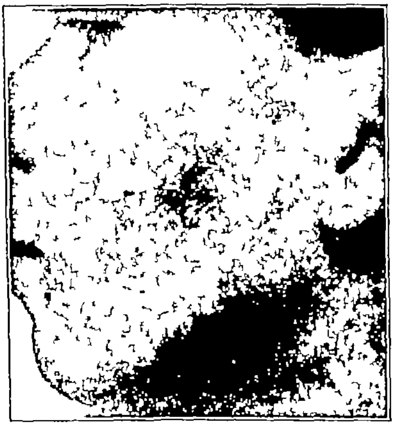
The methods that have been found successful are: (1) precipitation and adsorption methods, (2) electrolytic methods; (3) replacement methods In Nos (1) and (2) the active elements are associated with some finely divided material and an active powder thereby obtained which can be fixed with collodion on an applicator tray of suitable size and shape and this applied to the area to be treated No (3) involves the use of a metal plate which thereby becomes the applicator

1 *Precipitation and Adsorption Methods*

(a) If the original slightly acid solution is evaporated portion by portion on a nickel tray nickel nitrate is formed containing the active elements and this can be changed to the dry oxide by heating, or if the acid solution is neutralised with ammonia and the solution evaporated on the applicator, a deposit of activated ammonium nitrate is obtained

(b) *Sulphides* —The first attempts made were to precipitate the radio-elements along with lead sulphide by adding a lead salt (e g., lead nitrate) and precipitating with sulphuretted hydrogen gas and this method is recommended for the first trials of the new radiation It takes advantage of the chemical similarity between lead and radium D; radium E, which also forms an insoluble sulphide is precipitated at the same time To the extract of, say 30 g of tubes, about 0 5 g of lead nitrate is added and sulphuretted hydrogen passed through The quantity of lead nitrate added will be regulated according to the intensity desired, and if required the active powder can be diluted with ordinary lead sulphide Iron sulphide and mercuric sulphide precipitates may also be used to precipitate the radio-elements, but not copper sulphide One disadvantage of using salts of the heavy metals is their marked screening effect, and two lighter nuclear substances are therefore suggested

FIG 4



Same case as Fig 3. After treatment

(c) *Ferric Hydroxide.*—Very fine films of ferric hydroxide containing the radio-elements can be prepared by adding a small quantity of ferric chloride to the active solution precipitating with caustic soda, and drying in oven.

(d) *Calcium Carbonate* —Finely divided precipitated chalk, if shaken up for half an hour with the original acid solution after neutralising with ammonia and boiling off the excess, brings down about 80 per cent. of the activity by adsorption and makes a clean looking applicator (Of course a calcium solution may be used and sodium carbonate solution added )

This method has the very marked advantage that if the active powder on the applicator becomes damaged, it is sufficient to immerse it in dilute hydrochloric acid which puts the activated material into solution again, from which it can be extracted by any of the means suggested.

2 *Electrolytic Methods* —In the above methods the activated powder is spread on a tray and thus applied but if the surface to be treated is uneven it is practically impossible to ensure uniform distribution of the active powder Such uneven sites have arisen in cases of lupus erythematosus involving the nose, or nævus over an eyebrow or chin In such cases it is most suitable to prepare applicators by electrolysis of the active solution This suggests itself very naturally too, as a good means of fixing the active matter without employing any other material and, of course, an even deposit is easily obtained on any shape or size of applicator Owing to the fact that radium E (similar in chemical properties to bismuth) in acid

solution goes to the cathode, and radium D (similar to lead) in acid solution to the anode, it is not easy to extract both together. Therefore it is suggested that radium D should be plated out alone; from this radium E will grow, and in a month's time equilibrium will be established and a radium D and E deposit obtained, of practically constant strength for several years.

*Plating Out of Radium D.*—To plate as dioxide in acid solution requires the use of a platinum anode, and therefore it should be plated out as the element in strong caustic soda solution, using as cathode a nickel plate of required shape. To active solution add 10 c.cm. of 0·1 per cent. lead nitrate solution and make up to 150 c.cm. with strong caustic soda solution. Electrolyse for 24 hours at 70° C., using nickel cathode with 2 volts and a very small current, so as to obtain an adherent deposit. This can be protected with collodion or fine gauze if desired. The part of the electrode on which no deposit is wanted may be protected with wax or varnish.

3. *Replacement Methods.*—It remains to mention the extraction by chemical replacement, and this method has the advantage that no material is present to absorb any of the rays; but as a rule replacement methods are unsatisfactory, because while it is easy to deposit radium E on a metal plate by replacement, it is difficult to deposit radium D suitably; and it is radium D, which by its long life is the storehouse of the activity; without its presence radium E quickly declines.

Metals such as zinc and magnesium, which replace radium D from which radium E grows, or radium D and E together are readily affected by skin excretions and are therefore unsuitable as applicators. The only really suitable metal for replacement is nickel. A nickel plate (of the required shape and with the unwanted part protected with wax or varnish). when dipped in or boiled with a solution of radium D and E replaces only radium E, but this practically completely, and a very active plate is produced. But since no radium D is present the deposited activity due to radium E decays to half of its original value in five days to one-quarter in 10 days, to one-eighth in 15 days, and so on. But if the condition to be treated demands only a fairly short exposure the method is quite practicable. Iron also replaces radium E, but, of course, if an iron plate is left in the solution it rusts, and in the rust formed are found not only radium E, but also radium D by adsorption. This rust, of course, is a constant source of radiation and may be employed as in procipitation methods.

### *Strength of Applicators.*

The applicator most commonly used was an oval tray, ⅛ in. deep and 10 sq. cm. in area, and this caused the erythematous reaction to appear after 14 days' exposure; but it is obviously desirable to have some expression of its strength more definite than this reaction time. Unfortunately there is no convenient way of expressing the quantity of radium D and radium E present in the applicator, and in any case, if a carrier such as lead sulphide is used and the active film is protected with a collodion coating, there is a screening effect and some of the radiation is absorbed. For these reasons it is considered best to specify the strength of the finished applicator by reference to some easily reproducible standard, such as the alpha radiation from a uranium oxide film, as measured by an electroscope. The electroscope used was a beta-ray instrument made of brass, so mounted as to allow the applicator to be placed underneath, and with a screen of 1/10 mm. aluminium inserted in the base of the electroscope. The gold-leaf was 7 in. above the board on which the applicator was placed, and the circular base of the electroscope 4 in. in diameter was 4⅞ in. above the board. The uranium oxide tray was, of course, placed inside the electroscope, when its activity was being determined.

The activity of a 14-day applicator 10 sq. cm. in area, when measured through the 7 in. = 18 cm. of air and 1/10 mm. aluminium, was almost *five times* the activity of a circular uranium oxide film 4 cm. in diameter measured in the electroscope. If it is desired to produce the reaction after only three days' exposure over the same area the activity requires to be about 20 times that of the uranium standard.

The actual details of the *electroscope measurements* are:—

| | | |
|---|---|---|
| Natural leak of electroscope .. | = | 10 m. 30 sec. |
| 14-day applicator through 18 cm. of air and 1/10 mm. Al. .. .. .. | = | 4 sec. |
| 3 or 4-day applicator through 18 cm. of air and 1/10 mm. Al. .. .. | = | $1\text{–}1^{2}/_{5}$ sec. |
| 4 cm. diam. circular tray of uranium oxide inside electroscope .. .. | = | $18^{4}/_{5}$ sec. |

It will be remembered, of course, that it is the intensity that determines the reaction; a tray of 5 sq. cm. area, producing a leak, for example, of 5 seconds, will produce the reaction in seven days, as compared with a 5 seconds applicator over 10 sq. cm. It will also be understood that owing to the great difference in the penetrative quality of the rays emitted by radium D and E and uranium oxide, it is not possible to express one in terms of the other. But by using a standard film of uranium oxide for comparison, as indicated above, it will be possible to prepare applicators of suitable strength, after which the particular electroscope measurements (e.g., divisions of scale per minute per sq. cm.) may be used as standards.

### *Summary.*

1. The radio-elements, radium D and radium E, have been extracted from used radium emanation tubes, and in equilibrium together have been prepared for medical use in the form of applicators of different kinds.

2. Such applicators have been found to exert a beneficial action in the treatment of lupus erythematosus, and of various types of nævi. Conditions like eczema and psoriasis will also respond, but it has not been found convenient to treat large affected areas by means of applicators.

3. The radiation from radium D and radium E has the unique property so far as radium treatment of skin conditions is concerned, that it is all absorbed by the part being treated, since its effective penetration is only about 3 mm. of tissue.

4. Radium D and E applicators retain their strength and may be used for many years; 16 years elapse before the activity declines to one-half of its original value.

The authors desire to express their thanks to the Glasgow and West of Scotland Radium Committee for granting the facilities required in the carrying out of the research. They will be pleased to assist with further information or fuller details on any point if communications are addressed to Mr. McHutchison, Radiometric Laboratory, Glasgow University.

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# ACUTE DILATATION OF THE STOMACH COMPLICATING ARTIFICIAL PNEUMOTHORAX.

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THIS case is recorded on account of the unusual mode of death of a patient undergoing artificial pneumothorax treatment for pulmonary tuberculosis. The occurrence of acute dilatation of the stomach does not seem to have been previously recorded in this connexion.

A woman, aged 32, was admitted to the Royal Chest Hospital on May 15th, 1923, complaining of malaise and cough of 18 months' duration. There had been loss of flesh since July, 1922. Sputum was scanty, contained tubercle bacilli; no hæmoptysis. The past history was of fair health; "bronchitis" in May, 1922, and "inflammation of the stomach" at the age of 21. There was no family history of tuberculosis.

*Condition on Examination.*—Very thin and pale; slight brown pigmentation of the face; fingers slightly clubbed. Physical signs in chest: In front. Heart not displaced.

Some limitation of movement of right upper chest, with flattening below and hollowing above the clavicle Impairment of percussion note over right upper chest down to fourth rib was marked A patch of bronchial breathing, with bronchophony and whispering pectoriloquy, was present in first intercostal space. There were crepitations down to fourth rib In back: Impaired percussion note, weakened air entry and crepitations down to the lower angle of the scapula on the right side At the left apex there were a few crepitations both in front and in the back. Other systems appeared normal.

*Treatment.*—Absolute rest. Temperature was swinging from normal to 100° F., with occasional rises to 101° or 102°. Pulse range was 100 to 120. Respiration-rate 28 to 40 Occasionally the sputum was slightly blood stained. The signs in the right lower lobe increased, and signs appeared at the apex of the left lower lobe In October there seemed to be a definite improvement which continued during November. Towards the end of November the temperature began to swing again and the signs to change. A large area of amphoric breathing, with hyper-resonance, appeared at the right apex. In the right lower lobe marked impairment of percussion note with crepitations appeared. X ray examination showed a localised pneumothorax at the right apex, and considerable disease of the right lower lobe The left lung seemed comparatively clear, and physical signs in this side had receded. Active disease at the right apex was shown by the spontaneous pneumothorax, and in the lower parts of the same lung by the spread of physical signs and the X ray findings.

Artificial pneumothorax was performed on the right side on Dec. 8th. Ten refills were given between Dec. 9th and Jan. 14th. The mean pressure was not raised above plus 2 inches of water, and the largest refill was 500 c.cm. of air The temperature was markedly reduced by the operation, and the general condition seemed to improve On Dec. 20th X ray examination showed good collapse of the right lung On Jan. 10th the patient vomited and complained of some abdominal pain No abnormal character of the vomit was noted. On the 11th the last refill was given, 400 c.cm. of air giving a final mean pressure of plus 3 inches of water On the 18th she complained of some dyspnœa and a choking sensation on lying down. There was no further vomiting, thirst, or suppression of urine. On the 20th the dyspnœa became extreme and she died.

*Post-mortem Examination* (Jan. 21st, 1924).—The body was of a small woman, thin and wasted; the abdominal wall was very tense. Thoracic cavity: Right lung collapsed, leaving a clear space from the thoracic wall of from 4 to 5 inches No fluid There were web-like adhesions at the right apex, a tough slender band at the junction of upper and middle lobes, also a mass of adhesions posterior to this. Left lung: Adhesions at the apex, otherwise clear Abdominal cavity: Enormously distended stomach.

Viscera: Right lung collapsed, not quite airless. Tuberculous cavities: (a) three in upper lobe, size of florin; (b) one in middle lobe, size of shilling; (c) one in lower lobe, 2 inches by 1½ inches Left lung engorged; some collapse at the base. No obstruction to bronchus or vessel found Scars on the surface of upper part of the lower lobe, and at the summit of the apex posteriorly Tuberculous cavities: (a) two in upper lobe, 2 inches by 1 inch; (b) one in apex of lower lobe deep to scar Liver slightly nutmeg Stomach: Precise measure of capacity not available; estimated at about 8 pints. Mucosa smooth, pyloric orifice not obstructed. Spleen, heart and pericardium, kidneys, duodenum, pancreas, biliary system intestine, pelvic organs: No abnormality found. Glands: Cervical slightly enlarged. Glands at bifurcation of the trachea, and paratracheal glands greatly enlarged, especially on the right side These glands were soft on section, but not caseous.

### *Discussion.*

The chief interest of this case lies in the mode of death As a point of minor interest, it may be remarked that the presence of a spontaneous pneumothorax at the right apex did not prevent effective collapse of the right lung The condition of acute dilatation of the stomach was first described by Hilton Fagge[1] in 1872 Cases have been recorded since by many observers, of whom Box and Wallace, and Campbell Thomson are conspicuous. Campbell Thomson[2] has collected 44 cases of this condition into a monograph; five of these cases are of his own experience. This writer has attempted a classification on the basis of pathological or clinical associations. Thus groups are defined in which acute dilatation of the stomach has appeared, and usually proved fatal, after gross dietetic errors, after injury, and after surgical operations. It is noteworthy that, in th cases following operations, those in the abdomin area do not constitute a majority. In one group ar cases in which no definite pathological lesion wa discovered. A fifth group contains cases of acut dilatation of the stomach associated with definit pathological lesion in the abdominal area or elsewhere or else associated with some clinical condition c ill-health The state of convalescence, or of debilit following prolonged ill-health, seems to precede th condition in a number of cases Two of the cases i Campbell Thomson's monograph were convalescent one from scarlet fever and another from a feve undiagnosed.

Box and Wallace[3] describe one case of acut dilatation of the stomach associated with diabeti coma. In the youngest case described, a child o 3 years, fatty degeneration of the heart, foun post mortem, implies former ill-health. Dietetic erro was also a factor Pregnancy occurs once in Campbel Thomson's collection, and has been described in lik connexion by the same observer elsewhere.[4]

### *Cases Recorded in Connexion with Intrathoracic Disease.*

Campbell Thomson quotes one case of empyema one of abscess of the lung, and three of pleurisy wit pneumonia. In one case with abscess of the lowe jaw purulent pericarditis was found post mortem Battle[5] records a case associated with pleurisy and pneumonia. H. H Brown[6] has described a case in which acute dilatation of the stomach terminated rheumatism and chorea. Mitral endocarditis was found post mortem. Box and Wallace[3] describe two post-operative cases in which acute dilatation supervened. In one was found tuberculosis of both lungs, and in the other suppurative pericarditis in association with osteoperiostitis of the femur.

It is impossible to estimate the proportion of cases in which intrathoracic disease precedes acute dilatation of the stomach. An incomplete survey of the literature, which included Campbell Thomson's book, and the cases recorded in THE LANCET between 1900 and 1924, revealed 60 cases Intrathoracic disease occurred ten times, the conditions recorded were: Empyema, abscess of the lung, tuberculosis of the lung, endocarditis of each one case; purulent pericarditis, two cases; pleurisy with pneumonia, four cases Campbell Thomson refers five cases to dietetic excess and four to injury In two of these cases only was the injury abdominal. In seven cases no other pathological lesion was found The cases with the associations of these three groups were found in Campbell Thomson's book; no other cases of the same sort were found in the literature examined The post-operative group seems to be the largest; 19 cases out of 60 belong here Of these, operations in the abdominal area accounted for nine. Several recoveries have been noted, but the condition has usually proved fatal, and has frequently been undiagnosed until autopsy, as was the case described in this paper.

In 37 cases the day of death after the onset of symptoms apparently attributable to acute dilatation of the stomach has been noted Thus First day, 7 deaths; second, 13; third, 8; fourth, 4; fifth, 4, sixth, 1. Occasionally the acute dilatation has seemed to exist with remissions for as long as 11 days prior to death The case here described died on what was apparently the third day.

Attention is directed to the fact that intrathoracic disease accounts for a considerable proportion of cases of acute dilatation of the stomach This proportion seems to be about half as many as the cases preceded by operation, but greater than those precipitated by injury, dietetic excess per se, or those without discoverable causation.

*References.*—1 Fagge, C. Hilton: Guy's Hospital Reports, 1872–73 2 Thomson, H Campbell Acute Dilatation of the Stomach, 1902 3. Box, C. R., and Wallace, C. THE LANCET, 1911, ii., 214. 4 Thomson, Campbell THE LANCET 1902 ii., 287 5 Battle W H: THE LANCET, 1911, i., 7 6 Brown, H. H.: THE LANCET, 1890, i., 848.

# THE CENTRAL NERVOUS DISTURBANCE MANIFESTED BY AN EPILEPTIC FIT.

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SINCE the experiments of Ferrier and the clinical studies of Hughlings Jackson, it has been considered that the epileptic fit resulted from a stimulation of the cerebral cortex; that there was on the brain surface of every sufferer from fits a hyper-excitable area in which an abnormal stimulus originated, and from which it rapidly spread over the whole cortex, causing a sudden discharge of all the cortical cells; that the movements of the convulsion were the effect of the discharge of the motor cortical cells, while the "aura" (if any) indicated the site of the hyper-irritable focus in which the stimulus arose. These views of Hughlings Jackson still dominate all writings on the nature of epilepsy. Gowers, though he accepted Hughlings Jackson's views, considered also the possibility that the fit was brought about by inhibition of the brain cortex, and this view has, I understand, been put forward recently in France by Hartenberg. If, therefore, we endeavour to form any clear idea of the main symptom of epilepsy we must examine the elements of the fit in their relation to these two theories.

Neglecting for a moment *petit mal*, fits may be full or partial (Jacksonian); but since the Jacksonian fit hardly ever occurs in idiopathic epilepsy, it is only with the former kind of convulsion that we are now directly concerned.

*The Full Fit.*—The epileptic attack has been often and minutely described. In its typical form it consists of two stages, the tonic and the clonic, to which may be added in certain patients a short preliminary stage, the "aura," and a post-epileptic stage of unconscious action, well called "automatism."

In a number of patients the approach of fits is indicated to the relatives or even to the patients themselves by certain prodromal symptoms—usually of a psychical nature. They consist of an apathy, a mental dullness, a loss of memory, sometimes a decrease of those qualities which we class as "refinement." These mental changes appear to indicate a decrease of the normal cortical activity or control. There is never a state of elation or "flight of ideas" or an increase of mental power such as we might expect from commencing excitation of the psychical cortex. It may, in fact, be taken as a general rule that an epileptic will not have a fit during a period of intense mental activity or of enthusiasm. The prodroma rather favour the theory of cortical inhibition.

Loss of consciousness is an essential element of the true epileptic fit; it is difficult to reconcile it with the theory of cortical excitatition, but of the theory of cortical inhibition it is an essential part.

In most patients the fit begins with the so-called "tonic" stage; with a complete loss of consciousness, all the muscles of the face and limbs and trunk are thrown into tonic rigidity. It has been shown by Cobb from electromyograms of convulsed animals that this rigidity of the muscles is due to a tetanus and not to an excess of postural tone such as causes the stiffness of hemiplegia and other spastic states. The "tonic" (i.e., tetanic) stage of a convulsion may be produced in an animal by strong electrical stimulation of the cerebral cortex. But, on the other hand, fits with the "tonic" stage as their major part may occur in very young infants in whom the pyramidal tracts are still unmyelinated and whose motor cortex is, for that reason, presumably functionless; there is nothing to suggest that the mechanism of the seizure is different later in life, and so we must suppose that this portion of the fit is, as in the infant, independent of the motor cortex.

The next and usually longer stage of the fit, the clonic stage, involves movements which, though subject to some individual variation, are very constant in type. They consist in rapid flexion and extension at the elbows, wrists (less), and fingers, and, in the lower limbs, of large flexion and extension movements occurring alternately in the limbs so that one lower limb is in extension while the other is in flexion; there are in addition upward and downward movements of the lower jaw, clonic retraction of the cheek, and in many cases contraction of the vesical and sometimes rectal musculature. All these movements are at first strongly damped by the tetanus of the muscles involved and their amplitude increases greatly as that condition passes off. Similar movements can be elicited by electrical stimulation of the cerebral cortex, and it was because of this fact that Jackson's theory of convulsions gained general acceptance. Another explanation of the movements of the clonic stage based on later work may, however, be presented. The movements of the limbs are exactly those which can be produced by spinal reflexes. The movement which the legs repeat —withdrawal of the one and extension of the other— represents the full response to stimulation of the sole of the foot in a paraplegic subject or in a decerebrate animal, what Sherrington has called the "walking" reflex. This reflex can only be elicited when the cortical control over the spinal centres is removed. The movements of the arms, if they reach their full amplitude, show not only flexion and extension but also, with the extension of elbow and wrist, an element of hyper-pronation or inversion of the forearm and hand, and correspond closely with those (first described by Buzzard and Riddoch) which result from painful stimulation of the axilla in cases of quadriplegia and some cases of hemiplegia. These latter are brought about by a spinal reflex and are only demonstrable when the cortical control of the arm centres in the spinal cord is cut off. The movements of the limbs which the clonic stage of the fit exhibits are therefore capable of being produced by centres which exist in the spinal cord. No reflex has to my knowledge been described provoking the masticatory movements of the jaws and the retraction of the cheeks which occur in the fit; but these elemental movements are present in animals deprived of their cerebral cortex and almost certainly represent a function of the medulla oblongata. It is, consequently, unnecessary, that in order to explain the clonic stage of the fit, we should invoke cortical activity.

If the plantar reflex be tested immediately after a fit it is usually of the extensor type—a further indication that cortical motor control is in abeyance. It has been suggested that this is due to exhaustion of the cortical cells as a result of their discharge, but the fact that a second and equally strong fit may occur within a few minutes seems to me to preclude that explanation; so quick a recovery of the cortical cells is unlikely, and it is much simpler to regard the extensor plantar response as merely one sign of an absence of cortical function which obtains throughout the fit.

The aura which occurs in a small proportion of patients was regarded by Hughlings Jackson as an indication of the area of the cortex in which the excitation began. But it is hardly likely that simple subjective phenomena such as flashes of light or noises in the ears are cortical in origin. There are, however, in a few patients, auræ, particularly visual auræ, of a highly developed kind. One of my patients always at the beginning of a fit sees a brick wall which heaves towards and away from him, coming nearer at each heave till at last it strikes him, and as it does so he loses consciousness. Such phenomena are probably allied to dreams; in any case it is difficult, in the face of other evidence, to accept them as any proof of cortical over-activity.

Post-epileptic "automatism" presumably represents an imperfect recovery from the fit, the motor functions having recovered and the psychic being still partially in abeyance. We may suppose either that the psychic cortex is still affected by a primary inhibiting influence or that it is suffering from exhaustion. If the former be the correct explanation, the mental state is possibly similar to that of a dream, and "automatism" in many ways on a parallel with somnambulism

These are all the elements of the fit, but another point that must be referred to is the constancy of the seizure. Though there are some variations, the elements of the attack are the same and their sequence is the same in nearly all cases. To such a degree is this true that provided there are no signs of organic nervous disease we base our diagnosis almost entirely on the description or observation of the fit. I have already referred to the constancy of the composing elements—the "tonic" stage and the stereotyped movements of the clonic stage. Constancy of sequence is found not only in the main divisions of the convulsion but even in small details; though the epileptic's hand may take up its posture in a moment at the onset of the fit, yet the thumb is always turned into the palm and the fingers closed over it. If the seizure were the consequence of cortical stimulation the movements would seldom occur in the same order in any two patients; their sequence would depend on the direction from which the stimulus approached the motor cortical area and the direction in which it spread over it, and no small movements such as those of the thumb and fingers could be so uniform in their order of occurrence as to produce a sign of value for differential diagnosis.

Thus in analysing the full epileptic fit I have not found any unequivocal evidence of cortical stimulation, but, on the contrary, in the prodromal symptoms, in the unconsciousness, and in the presence of an extensor plantar response at the end of the clonic stage I see indications of cortical inhibition, the movements of the clonic stage may be explained either by cortical or by brain-stem and spinal action, but the latter explanation is much more in accordance with the other elements of the fit.

I have not overlooked the fact that movements similar to those of a fit are caused by experimental stimulation of the brain surface. We must remember that in such experiments the cortical motor cells merely pass on the stimulus to the spinal and brain-stem cells, which are the true motor cells; and generalised convulsions with the same tonic and clonic stages can be produced in animals in which the cerebral hemispheres have been separated from the brain-stem and cord Their occurrence in infants has already been mentioned.

*Petit Mal*—A large proportion of epileptics suffer from minor as well as major attacks. The former usually consists of a momentary unconsciousness, interruption of speech, and loss of the continuity of thought, in many cases the patient suddenly falls down but is able to rise again at once These phenomena we cannot interpret as evidence of cortical stimulation, but rather of inhibition, of the speech, psychical and motor functions of the brain

*Conclusion*—We are forced to the conclusion that the essential central nervous disturbance produced by true (idiopathic) epilepsy is an inhibition of the cortical function and that in the major seizure this is accompanied by an uncontrolled discharge of centres in the brain stem and spinal cord.

### A Note on the Partial Fit.

The partial (Jacksonian) fit is very rarely, if ever, a manifestation of idiopathic epilepsy, but indicates a localised lesion of the brain and is therefore better called "focal" or "epileptiform." I only mention it here because it may be considered to have a bearing in the causation of the full fit.

In the partial fit there is no loss of consciousness, so that the chief indication of cortical inhibition is absent, and we must be guided by other features (1) When in association with a Jacksonian fit—say an attack of convulsive movements of the right hand—speech is affected, it is always in the direction of a loss of function; usually the patient becomes either quite unable to speak or unable to produce exactly those words which he wishes to use, both during the attack and for several minutes afterwards. (2) The movements of the partial fit are the same flexion and extension movements of the fingers or other parts that occur in the full epileptic fit; they are not complex or highly integrated movements such as we might expect from cortical activity; by the nature of the movements the attack declares itself as part of a full fit. (3) The conditions which produce such attacks are cerebral tumour (including abscess, gumma or tuberculoma), infantile hemiplegia, meningitis, and many other conditions in which the cerebral cortex is damaged. In practically all such conditions localised destruction of the brain is present. This is especially noticeable in infantile hemiplegia, a disease in which the motor cortex of the affected side is functionless, and at post-mortem examination shows atrophic sclerosis or porencephaly. Yet in such cases the fits may be confined to the limbs corresponding to that side of the brain

There are thus indications that the partial fit occurs when the function of a circumscribed area of cerebral cortex is impaired It is quite evidently not due to any increase of the normal function of the cells of the affected area, but whether it is in any way dependent on abnormal stimuli transmitted to the impaired cells and conducted by their fibres to the lower centres, or is merely an escape of the lower centres from cortical control, cannot yet be decided.

# PNEUMOCOCCAL MENINGITIS.

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Owing to the comparative rarity of recovery in pneumococcal meningitis it may be of interest to record the following case, which was under my care and that of Mr Seton Pringle.

A boy, aged 16, was admitted to hospital on Dec 19th, 1924 He had received a kick from a horse 12 hours previously There was a depressed fracture on the left side of the bridge of the nose, and an incised wound two inches long above the right ear

*Condition on Admission*—The boy was in a collapsed state, complained of severe headache, and could not see with the left eye; pulse, 90, temperature, 98.8° F; respiration, 26 The knee-jerks and Achilles jerks were absent. The following day he was in an excited condition, uttering loud cries and shrieks even when undisturbed, the head was retracted, Kernig's sign present, extensor plantar reflex in right foot; temperature, 102°; pulse, 90 A lumbar puncture was performed on Dec. 21st, and 20 c.cm. of very turbid fluid under tension removed The fluid on standing gave a very copious deposit of pus and on culture Prof. J W Bigger obtained a pure growth of pneumococcus, Group IV For some days the boy remained in a heavy sleepy condition, with a spiky temperature rising to 103°; pulse, 90 to 100 Then the condition gradually improved, the temperature reached normal on Jan. 11th, 1925, all stiffness of neck and Kernig's sign had disappeared by Feb 6th and the knee-jerks were present but feeble. The pulse was rapid (90 to 100) until Feb 20th when it became normal. On March 6th the boy left hospital feeling perfectly well, the only abnormalities being the depressed fracture of the nose, feeble knee-jerks, and slight defect of vision of the left eye due to several now healed chorioidal ruptures. When last heard of, some months afterwards, he was in excellent health.

*Treatment* consisted in lumbar puncture repeated at intervals of three or four days, 20 to 10 c.cm. being removed at a time Five punctures in all were done, the last specimen of fluid being perfectly clear, but still under somewhat increased tension. Hypodermic injections of an autogenous pneumococcal vaccine were also given. There was a marked improvement after each lumbar puncture, and usually a fall in temperature after each injection of vaccine In this case infection had evidently occurred from the nasal cavities owing to fracture of the cribriform plate.

The first case of recovery in pneumococcal meningitis was reported by Jemma[1] in 1890. In a general review of the prognosis of pneumococcal meningitis by Rolly[2] in 1911 he recorded four cases of recovery out of 30 cases which came under his care. He states that up to that time only seven cases of recovery had been recorded. Two of his cases of recovery occurred in young adults and two in children. In all four cases there was coexistent lobar pneumonia, and the cerebro-spinal fluid contained a large amount of pus and numerous pneumococci. He treated all by repeated lumbar puncture; in one case—a child aged 2¾ years—he performed no less than 16 punctures and withdrew a total of 600 c.cm. of fluid. In a more recent publication[3] statistics are given of 7 per cent. recoveries in a series of 42 cases, and in another series there were 10 per cent. recoveries in 60 cases. Numerous other cases of recovery have been reported in the last few years. In some of these repeated lumbar puncture was the only treatment, in others serum was given in addition, whilst in others again fixation abscess was employed in addition to lumbar puncture and serum. Recovery may take place whether the patient is an adult or a child, whether the meningitis is serous or purulent, whether infection of the meninges is associated with pneumococcal infection of the lungs, or whether it is secondary to fractures of the skull with resulting infection from the nasal cavities, or whether it is a sequel to suppuration in the middle ear or accessory nasal sinuses.

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[1] Baumgarten's Jahresberichte 1890

[2] Deutsch. Med. Wochenschrift, 1911, p 774

It is significant that in the case which I record the pneumococcus belonged to Group IV., though I have seen a fatal case in which the pneumococcus was also Group IV. The reported cases of recovery do not state the type of pneumococcus sufficiently often to enable one to draw any conclusion as to whether the type influences the prognosis materially.

*Résumé.*—1. A case of meningitis due to pneumococcus, Group IV., with recovery, is reported. 2. In pneumococcal meningitis recovery occurs in 10 per cent. of cases. 3. The essential treatment is repeated lumbar puncture.

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[3] Bull. de la Soc. Méd. des Hôpit. de Paris, 1923, pp. 729, 768.

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# Medical Societies.

## MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society was held on March 26th, Dr. WILFRID FOX, the President, occupying the chair, when a discussion on

### MARRIAGE AND SYPHILIS

was opened by Dr. G. RIDDOCH. In agreeing to open the debate, said Dr. Riddoch, he felt he was in a false position, as he was profoundly ignorant on the question of the infectivity of syphilis for, as a neurologist, he saw only the late effects, the tragedies. He would therefore use the opportunity to stir up a few warnings against giving too optimistic a forecast in the early stages of the disease. A perusal of the literature seemed to indicate that it was a subject on which no one was very well informed, yet it was of the first importance. There was now available much more precise information by which to answer the question so often put to the medical man by patients distressed in this way; at the present time it was a matter more for discussion than for dogmatic statement.

The first question was: How long, and under what circumstances, was syphilis infectious? It was agreed that in the primary and the early secondary stages —i.e., when the chancre was present and when cutaneous lesions appeared—the infectivity of the disease was very high; spirochætes were present in the semen and other secretions. It was when the later phases of the disease were considered that difficulties arose. The infectivity tended to diminish as the disease progressed, though not in a steady way; there seemed to be re-animations as shown in fluctuations in virility. Decision was difficult when the cutaneous lesions had disappeared and latent syphilis was present, the only manifestation being a positive Wassermann. When that was the case and the primary infection had taken place five or six years earlier, what was the infectivity? Clinical and experimental evidence seemed to show that infectivity was still present at this stage. In rabbits experimentally treated at such a stage the intra-testicular secretions and the blood were positive. Certainly spirochætes tended to persist for a considerable time in healed chancres, and monkeys could be infected with syphilis by injecting material from chancres which had healed 14 months, even though local and general antisyphilitic measures had been adopted. It was not known in what proportion the disease was infectious at this stage. What was the position when the Wassermann was negative? Could it be said that at this stage infection could not occur? He did not think so, especially when the Wassermann had previously been positive. Men who had so-called latent syphilis and, having been assured it was safe to marry had done so, had infected their wives, and the latter had borne syphilitic children. It was very desirable to know in what proportion of cases such an accident was liable to occur. In the late stage of latent syphilis—i.e., in the first four or five years after the infection, with or without treatment, and the Wassermann positive but without clinical manifestations—could it be definitely stated that there was no liability to the man, if he married, transmitting the disease to the offspring? He thought not, for the positive Wassermann showed that organisms of syphilis were still present in the body, possibly shut off in a gumma or otherwise isolated, but liable to be liberated into the system. Of six men infected three to six years previously who married while having latent syphilis, five of the wives developed a positive Wassermann, and four of them bore syphilitic children. To what extent were these exceptional occurrences? Clearly those cases constituted a warning. Were cases who admittedly had had a chancre, but whose Wassermann had remained negative for some time, free from infectivity? He did not know, and had not been able to find evidence that there was definite information on the point. There remained to be considered those late cases of syphilis with clinical signs, cases which were often seen because of neuro-syphilis. Were these cases, even with a negative Wassermann, certainly non-infectious? When a patient had got tabes or aortitis, or a gumma of the liver, he did not know whether infection was possible, but thought probably not.

In regard to infectivity, he thought the case of the woman was somewhat different from that of the man, especially in regard to syphilis in the secondary stage before treatment, for with her the danger of infection was greater than in the male. Colonel Harrison's view, with which he was in general agreement, was that the patient should be required to wait four years before considering marriage, and that this period could be shortened by treatment, if it were efficient and thorough, and that before suspending treatment the blood and cerebro-spinal fluid should be Wassermann-negative. Afterwards there should be an examination every month for a year, and a week after a provocative dose of N.A.B.; also at the end of another six months and after a year following a provocative dose. Coming well out of that ordeal seemed to justify marriage, but the speaker thought it might not be safe even then, unless the case had been caught early and the treatment commenced forthwith. Abrahams considered that if the cerebro-spinal fluid was positive, even without nervous signs, in the third year, the patient was a possible candidate for neuro-syphilis later on. That statement was made without much supporting evidence, but the question of how risky marriage would be in such a case was one well worth consideration. Another authority considered that a negative clinical and serological examination after seven years meant that the patient was reasonably safe, but that even then some cases showed there were exceptions. Prosser White considered that in the tertiary stage the local lesions were non-infectious, but the speaker had his doubts as to that. The question appeared to be even more difficult in the case of women, who seemed much more likely to pass the disease on to their progeny. One authority declared that a woman whose blood gave a positive Wassermann should never marry. Dr. Panton would probably say what was the significance of the Wassermann reaction, because in this matter the pathologist was a very important person. Often one saw patients who had been efficiently treated without showing clinical manifestations, or in whom, accidentally, the Wassermann was found to be positive. What was the infectivity here? He always felt unsafe about such cases. And could a man who had had a positive Wassermann but was now negative be pronounced cured and free from infection? The danger was that he was liable to become positive later on.

It was not sufficient, said Dr. Riddoch, to be able to answer the patient's question as to whether or not he was infectious and liable to transmit the disease; there was the further question whether the disease was likely to incapacitate him as a wage-earner later on, say 15 years hence. It was a difficult problem, but he knew of cases in which a favourable answer had been given by the medical man with disastrous consequences. In forming an opinion he stressed a thorough clinical examination of the patient, mentioning the case of a man aged 35 who had a chancre 12 years previously. He had mercury treatment—not very efficiently—and six years later had N.A.B. injections, and three years prior to marriage had N.A.B., mercury and iodide of potassium. But his blood was Wassermann-positive. Three separate syphilologists assured him it was safe for him to marry. Three months after marriage the speaker saw him and found him the subject of marked tabes, and the history showed that for years he had had lightning pains and had a habit of wetting the bed, this in addition to the pupillary and other classical signs of the disease. His view was that a positive Wassermann indicated the presence still of active spirochætes in the body, hence the prognosis given in such cases should be cautious. A great safeguard against error was not to be content with a single Wassermann test. A smaller proportion would show a negative Wassermann in the spinal fluid than in the blood. On the other hand, an ultra-cautious attitude was liable to breed syphilophobia. Stated in a broad way, his own feeling was that if a man had had syphilis and it had become generalised he ought to have treatment for the remainder of his life, otherwise he could not be said to be free from infectivity nor from the risk of remote complications. A more lenient view was justifiable in the case of a man who had never had a positive Wassermann in either the blood or the cerebro-spinal fluid. Finally, Dr. Riddoch raised the question of the fate of the offspring of syphilitic parents who were supposed to have been cured before marriage; also as to the treatment which could be considered safe and efficient to ensure that the patient would not develop later sequelæ.

### *The Pathological Aspect.*

Dr. P. N. PANTON said he could do little more than propound questions to which he was unable to find the answers. First, could it ever be said that a person who had had syphilis was cured? The information given by the blood Wassermann was insufficient evidence of cure, for that reaction might be negative for a time and then revert to positive. He did not think there existed any method by which it could be said that a person who had had the disease was certainly cured, though a possible exception was the patient with a chancre and a negative Wassermann who was strenuously treated from the first, coupled with—what he regarded as very important—complete abstinence from alcohol. It was very important to know whether syphilis in the tertiary stage was infective. Sir Jonathan Hutchinson considered it was not, and there was much evidence that tertiary syphilitics did not infect their partners. Since the introduction of the Wassermann test, however, there seemed good reason to doubt that statement, and it now seemed certain that infection could be spread in the tertiary stage. A further question was as to what percentage of latent syphilitics subsequently developed lesions. He was not aware of any figures on this matter. His definite view was that no one with tertiary manifestations ought to marry, both on the grounds of infectivity and of subsequent disability. Even cases of latent syphilis without manifestations risked something by marrying. He would have thought that by now the venereal clinics could have supplied the material to enable this point to be settled.

The physician, said Dr. Panton, was apt to regard the Wassermann reaction wrongly from two or three points of view. He was inclined to regard it as infallible, but everyone was liable to err, and, for safety, the test should be repeated. And mistakes were made in reading or interpreting the result of the test, for it was not a question of it being simply positive or negative, especially in cases in which it was between positive and negative. In a given case of the kind one pathologist would return a feeble negative, another a feeble positive, the reaction being the same. No one would nowadays say a case was cured because of a negative blood, or even spinal fluid negative, for at any time it might revert to positive; moreover, an open, progressive, syphilitic lesion might give a negative Wassermann, both in the blood and the cerebro-spinal fluid. It seemed that certain people did not have a reaction and produce anti-bodies. He asked what was the longest time during which the Wassermann had remained negative and then become positive. The longest time he had seen that was less than two years. A frankly positive Wassermann, he thought, could be confidently taken to mean that active spirochætes still existed somewhere in the body, and no such person could be advised to marry. He did not think the pathologist was the right person to answer the inquirer's question as to marriage, and certainly the dermatologist was not. His practice was to send such inquirers to the general physician for a thorough overhaul.

### *Discussion.*

The PRESIDENT agreed as to the intermittent character of syphilis. To some of the questions which had been propounded he thought there never would be an answer, as so much dependence had to be placed on what was told by the patient. And who could say that it was always the husband to whom a wife owed her infection? He believed it was true in the main that four years after the primary disease it was rare for a man to give the disease to his wife. And yet a case was known in which that occurred 18 years after the chancre. The greatest help in these matters could be given by the general practitioner, for to him the vast majority of cases went in the first place, and he kept in touch with the family happenings. Some patients lost their immunity and became infected again.

Captain F. C. DOBLE considered that too pessimistic an attitude led to a condition which was worse than the disease—namely, syphilophobia, which sometimes eventuated in suicide. Syphilis was worse in a woman than in a man, and every woman who had had syphilis at any time should resume treatment as soon as she became pregnant. He agreed that a very important consideration was whether the syphilitic husband was likely to be an encumbrance to his wife.

Dr. B. B. SHARPE said he was now more pessimistic about the disease than before he heard the two opening addresses. He knew of cases in which syphilis had been transmitted to the second and third generation. It was easier cured in the third generation than in the second. In doubtful cases in which advice was sought, the man should be required to consult the woman, and if she cared to take the risk, no objection should be taken.

Colonel E. G. **FFRENCH** considered the problem was really one of treatment. If a primary case had been adequately treated for years, permission to marry could safely be given, he thought. In a case in which the disease was in the secondary stage before treatment was commenced, there should be an interval of four or five years. If a man had, at consultation, a positive Wassermann, he should not be given permission to marry for seven to ten years.

Colonel L. W. **HARRISON** said there were cases in which the disease had been transmitted many more years than five after the primary chancre, but he had not personally known one. He thought a man might safely marry if he had been well treated, if five years had elapsed, and his cerebro-spinal fluid had remained Wassermann-negative two years. He looked upon a man with a positive Wassermann as a candidate for disabilities later which would probably incapacitate him. He considered that a patient under the influence of treatment was very unlikely to transmit the disease, as the spirochætes would not be allowed to get into the semen. Certainly a woman who had been syphilitic should have treatment at each pregnancy, on account of the great intimacy between mother and child.

Dr. **MARGARET RORKE** quoted two cases in which syphilitic children were born, the parents of whom were said never to have had syphilis, but she found they were tabetics. She agreed as to the need of a guarded prognosis, and also that a woman who had had syphilis, however long ago, should have treatment at every pregnancy.

### *Reply.*

Dr. **RIDDOCH**, in reply, defended his pessimism, and said he thought that, generally, there was too much complacency about the whole matter. He had hopes that many of the questions propounded could be answered, especially as syphilis was nowadays more freely owned to and talked about. At the London Hospital there was a mass of information on the subject awaiting analysis and summarisation which would give valuable data when dealt with.

Dr. **PANTON** also briefly replied. He said the Wassermann was not an evidence of immunity. He had had very little success with provocative doses in the serum reactions.

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# ROYAL ACADEMY OF MEDICINE IN IRELAND.

## SECTION OF OBSTETRICS.

AT a meeting of this Section held on March 12th Dr. D. G. **MADILL**, the President, took the chair, and Dr. **BETHEL SOLOMONS** and Sir **JOHN LUMSDEN** read a short communication on

### *An Unusual Case of Pyrexia.*

The patient, aged 22, had first been seen by Sir John Lumsden suffering from general debility with pyrexia. There had been an influenzal form of attack from which she had recovered. Her symptoms suggested enteric fever, but tests for typhoid and paratyphoid A and B were negative. Sleep was indifferent. For six weeks there was some rise of temperature, the lowest record being 98·8° F. and the highest 102·8°. As no definite cause of the pyrexia could be established, Dr. Solomons examined her recto-abdominally. Finding some fullness in each lateral fornix, he advised vagino-abdominal examination under anæsthesia. The finding then was the same and a diagnosis of tuberculous salpingitis was made.

The blood examination was as follows: Leucocytes, 38,000 per c.mm. Differential count: Polymorphonuclears, 53 per cent.; lymphocytes, 33 per cent.; eosinophils, 7 per cent.; transitional, 7 per cent.

When the abdomen was opened the tubes were found to be slightly thickened and larger than normal, with closed fimbriated ends. Tubercles were not present. It was decided to remove the tubes, which were taken away in their entirety. The ovaries were bound up with them, but it was possible to spare a small portion of the left ovary. After 10 days the pyrexia subsided and the temperature remained normal. The microscopic examination made the diagnosis evident, the submucosa being packed with giant cells.

Two months later the patient again became ill and consulted Dr. F. C. Purser, who diagnosed encephalitis lethargica. She had in addition an attack of diphtheria, to which she ultimately succumbed.

Sir **JOHN LUMSDEN** said that this was an interesting and puzzling case.

When he first saw the patient she gave a history of having been ill for some weeks and of having had an attack about a month previously of what would appear to have been influenza, though her doctor had called it food poisoning. He personally thought that it was an attack of gastric influenza. Her pulse was 100, her tongue was furred, and the apex beat was a little bit out; and he thought that possibly there was a certain amount of myocarditis.

The patient went away, but a few days later returned, and he put her to bed in hospital. Her tongue was still furred; she was febrile, rather constipated, and hard to feed. A blood culture and a Widal test were both negative. There were at that time no symptoms whatsoever of encephalitis lethargica. He suspected, however, that there was some tuberculous focus, although there was absolutely nothing to be made out in the lungs. The epigastrium was tender, and there was nausea if food was pushed at all, which made him think that there was something wrong in the abdomen. Dr. Abrahamson then saw the case with him, and they came to the conclusion that it was a case of tuberculous peritonitis, but asked Dr. Solomons to see her. Dr. Solomons saw her, and operated; after the operation she remained febrile for about 14 days, but then her temperature came down. During convalescence she became rather emotional, but improved enough to be sent to the country. Some time later Dr. Purser saw her, as he (Sir John Lumsden) was away, and Dr. Purser diagnosed encephalitis lethargica. It was, of course, just possible that the girl had had encephalitis lethargica all through, but he did not think it probable. She then developed diphtheria and died.

Dr. L. **CASSIDY** asked how the diagnosis in this case had been arrived at. If tuberculous salpingitis was to be taken as a reason for the state the tubes were found in, it seemed to him rather an extraordinary procedure to mutilate a young unmarried girl on evidence which to him seemed insufficient. Even the microscopical description of the tubes did not seem to him sufficient to account for the clinical symptoms in the case as described by Dr. Solomons and Sir John Lumsden. He, personally, would have thought that the condition was due either to tuberculous meningitis or encephalitis lethargica. He felt that in cases of this kind the wisdom of applying either radium or X rays should always be considered. During the last few years he had seen about 30 such cases and with two exceptions had always found that good results followed treatment by radium or X rays. The symptoms in this case, he thought, largely pointed to a condition of tuberculosis, possibly in the upper abdomen, but not to a condition which would justify removal of the tubes.

Dr. L. **ABRAHAMSON** said that certainly when he saw her there was no sign of either meningitis or encephalitis, and he did not think that when Dr. Purser saw her she had meningitis, as the cerebro-spinal fluid was not under tension, and he had never seen a case of tuberculous meningitis in which the cerebro-spinal fluid was not under tension. Encephalitis lethargica was sometimes hard to diagnose, but when this patient was seen by Dr. Purser the symptoms were apparently so typical that the diagnosis was obvious. When he (Dr. Abrahamson) saw her she was suffering from pyrexia and her symptoms were all due to this. The only symptom that she had, however, was vague abdominal pain. No evidence of tuberculosis could be found either in the chest or in the abdomen. When the contents of the tubes were cultured for tubercle bacilli the result was negative, but tubercle bacilli were found in sections. No naked eye tubercles could be seen, but microscopically they were easily seen. He thought that removal of the tubes in this case was absolutely justified, and that the result was satisfactory, and he believed that but for the development of encephalitis lethargica the patient would have lived. She died from an intercurrent disease which had nothing to do with the original complaint. The result of X ray treatment in these cases was that there was no internal secretion of the ovaries, whereas in this case, after operation, a little ovary had been left.

Dr. Gibbon FitzGibbon said that the question whether active tuberculous tubes should be removed was a much discussed one; he, personally, always took them away in cases in which there was evidence of advancing active disease. If the tubes were not removed the patient was left with a disease. Removal could not leave the patient more sterile than she was before, because tuberculous tubes were functionally useless.

Prof. R. J. Rowlette drew attention to the high blood count in this case, which at the time the count was taken was apparently one of tuberculosis. He thought that this was possible evidence of an extreme degree of purely tuberculous toxæmia. Nowadays pyrexia was regarded as a symptom not of tuberculous toxæmia, but of septic toxæmia; but in this case it was proved to be a symptom of tuberculous toxæmia. A curious feature of the case was that diphtheria occurred when encephalitis lethargica was also present. He thought it possible that tuberculin might have done the girl good, but it had been necessary to open the abdomen to see what disease was present, and when the tubes were found to be tuberculous there would have been considerable risk in leaving them alone. He therefore approved of Dr. Solomons's treatment.

Dr. J. S. Quin asked if erosion of the cervix was present or if there was any leucorrhœa.

Dr. G. W. Theobald referred to a patient who had been admitted to hospital said to be suffering from eclampsia. A lumbar puncture was done, but the patient died five minutes afterwards. At autopsy every gland was found to be a mass of tuberculosis. In the case described by Dr. Solomons, assuming that the patient had tuberculosis, encephalitis lethargica, and diphtheria, was it right to assume that the tuberculosis of the tubes was sufficient to cause the very definite symptoms from which she had suffered for a long period of time? Was it not likely that there was some focus of tuberculous infection elsewhere in the body?

Dr. Solomons, in reply to Dr. Cassidy, said that the diagnosis was arrived at (1) by excluding other diseases, (2) by bimanual examination, and (3) by the appearance of the tubes taken in conjunction with the history of the case. He disagreed entirely with Dr. Cassidy about the treatment. He had a very large experience of tuberculosis of the tubes; he had tried palliative salpingostomy in cases of sterility in these cases, and had found that the results were bad. Either there was no cure of the sterility or there was recurrence of the disease. He therefore recommended strongly complete salpingectomy for tuberculosis of the tubes; in this way the disease was removed. The chance of pregnancy before removal was nil. There was no need to extirpate the uterus, for if it was infected the infection cleared up after salpingectomy. Treatment by radium and X rays was useful in general abdominal tuberculosis. In this case there was no erosion of the cervix, nor was there leucorrhœa. So far as could be felt there was no tuberculous disease higher up in the abdomen. He was convinced that this was a case of tuberculosis of the tubes causing pyrexia and cured by operation.

Dr. Theobald read a paper on the Contraction Ring in Labour.

## JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, ST. ANDREWS.

On March 23rd Dr. J. H. P. Paton delivered a lecture on

### *Youthful Irregularity of the Pulse.*

Mackenzie, he said, had pointed out that an irregular pulse was a physiological phenomenon of youth, which was exaggerated in convalescence from febrile illness. It tended to disappear in some febrile complaints, and its return was evidence that the toxic process causing its disappearance had become quiescent. The pulse was regular in only four out of 500 consecutive girls whom Dr. Paton had examined on admission to school. Each of the four in whom it was absent had proved to be suffering from a febrile complaint. From these facts, and from a large number of observations spread over some years, he concluded that the irregularity was never absent, except in disease, in girls from 8 to 16 years of age. Its absence was a valuable sign of ill-health, and its return in a marked form in convalescence had the same significance as the fall of temperature, and indicated that active toxæmia had ceased. This fact was evidently not generally known, since it was common for young persons to have their activities restricted because the pulse was irregular. The terms arrhythmia and irregularity carried a significance of abnormality which was doubtless the reason why Mackenzie's view had not received wider recognition. It was absence of irregularity that was the symptom of disease.

On March 30th Dr. Paton gave a second lecture in which he discussed the mechanism responsible for the irregularity of the youthful heart-beat. However simple an explanation of the phenomena might seem to some people, it was obvious from the views expressed by Mackenzie in the fourth edition of his "Diseases of the Heart" that none of them satisfied him completely. Mackenzie believed that both sympathetic and vagus impulses played a part in producing the arrhythmia, and concluded that the source of the impulses was probably to be found in the activity of the respiratory muscles or in some other peripheral source. He believed that the disappearance of the irregularity in febrile conditions was due to the action of toxins of microbic origin on the sino-auricular node, resulting in such an increase of rate that the irregularity was abolished. Referring to impulses from within the heart itself and to the variations in carbonic-acid content of the blood during respiration as possible causes of sinus arrhythmia, Dr. Paton said that the clinical evidence which he had been able to collect indicated that the irregularity had its origin in the activity of extracardiac reflex arcs of which the cardiac fibres of the vagus and sympathetic caused the effector response. The problem then could be stated simply: Where in health did the impulses determining the activity of these nerves originate and at what points were the reflex arcs interfered with in disease? Admittedly, no certain conclusions could be reached, but there was evidence which suggested that the impulses hastening the rate in inspiration were probably circulatory in origin, and had their source in the variation of the pulmonary capillaries in response to variation in intrathoracic pressure. The vagal stimuli inducing slowing in expiration probably originated in the variations of pressure or circulation in the abdomen. No pulmonary condition was known which induced slowing of the heart. He looked on the variation in rate as an attempt at adjustment to the changes in distribution of blood as between the pulmonary and systemic circulations, resulting from alterations in the capacity of the chest. The difficulty of the subject was due to the opposing action of the two cardiac nerves; it was impossible to differentiate the effect due to each.

A post-graduate course of 50 lectures and demonstrations for general practitioners is to be held at the Institute, St. Andrews, from June 14th to 30th. The subjects to be dealt with cover a large field, and those who wish to carry out practical work in the laboratories will be given facilities. The fee for the course is five guineas.

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*Corrigendum.*—Dr. G. Roche Lynch informs us that he did not make the remarks attributed to him in our report of the discussion on Lead in Malignant Disease at the Medical Society of London (THE LANCET, March 27th, p. 659).

# Reviews and Notices of Books.

## THE PRODUCTION OF LOCAL IMMUNITY.

*Immunisation Locale Pansements Spécifiques.* By A. BESREDKA. Paris: Masson and Cie. 1925. Pp. 252. Fr.20.

THE title of this book is a little ambitious. Its scope is really limited to the phenomena exhibited when certain strains of infective bacteria are applied to the skin by the author's special method of "pansements spécifiques," and when certain of the intestinal groups of bacteria are administered by mouth. The author has here brought together the materials of experimental work, brief records of which have appeared from time to time since the war in the *Annales de l'Institut Pasteur.* The work has been further elaborated with historical reviews of the subject and a discussion of the mechanism of this particular type of immunity and theories—which latter the author points out are still very much in the evolutionary stage. Briefly stated, Prof. Besredka's method consists in infecting the shaved skin of the animal by the application of a dressing soaked in an attenuated or killed culture of the organism. This application is followed by local reaction of the surrounding skin, which lasts from four to six days and then subsides. The cuti-vaccination thus effected affords protection for the animal against a subsequent infecting dose of the same organism large enough to kill a control animal. Similar effects may be produced by intradermal injection. In both cases the animal acquires immunity, but the serum does not possess the power of protecting a normal animal against infection. This work has been carried out chiefly with *B. anthracis*, staphylococci, and streptococci. Similar experiments have been made by the intestinal route in the case of the dysentery group of organisms, the intestinal mucosa in this case appearing to act in the same way as does the intact skin in the case of anthrax bacilli, streptococci, and staphylococci. Finally, in the typhoid group, Prof. Besredka has been able to produce similar results by means of sensitising the intestinal mucosa by a preliminary treatment with ox bile. The book contains numerous data with regard to prophylactic inoculation against anthrax carried out on larger animals under agricultural conditions and against dysentery and typhoid fever on soldiers and refugees. The work contains many suggestive ideas and comes at an opportune time when the intradermal route for tuberculin testing and for other skin tests is becoming more and more used in applied clinical immunity. A good bibliography would have added considerably to its value.

## BIRTH CONTROL AND THE STATE.

A Plea and a Forecast. By C. P. BLACKER, *M.C.*, M.R.C.S., L.R.C.P. London: Kegan, Paul, Trench, Trübner and Co., Ltd.; New York: E. P. Dutton and Co. 1926. Pp. 95. 2*s.* 6*d.*

THIS is a temperate and scholarly survey of the arguments for and against the encouragement of the practice of birth control. Dr. Blacker gives the impression that the controversy has aroused in him keen interest but no morbid excitement; he thus restores to a wholesome commonplace level a subject which some have exalted to an ecstatic plane, while others have trampled on it with dirty feet. Military, economic, religious, and socio-political arguments against contraception are here stated in trenchant terms; the arguments in favour of its wider practice are, if anything, less forcibly set out, so little has the author's own bias been allowed to prejudice the reader. For example, the prevalence of attempted abortion in the class where birth control is least practised is certainly not over-emphasised, and the estimate, founded on inquiries, that more than half the infants born in a hospital district are unwanted is not, we think, too high. The conclusion drawn from consideration of the complex problems involved is that if the existing form of civilisation is to have any permanence, the necessity for controlling population will have to be realised and striven for by the educated.

The main purpose of the book is to ask for an expression of an opinion by the medical profession as a whole, or in large majority, designed to induce the Minister of Health to permit medical officers of welfare centres to give instruction in birth control at their discretion. The admission, disconcertingly sandwiched in the middle of the book, that no really satisfactory contraceptive as yet exists, renders this plea less effective. Coitus interruptus is justly condemned as harmful to both sexes; the penile sheath is not likely to be used by the type of individual whose procreation it is desirable to restrict. There remain chemical suppositories or some form of rubber cap for use by the woman. Until a method is found which involves less manipulation of the female genital organs, less risk of occluding discharges from the cervix, and gives greater security than any of the chemical preparations now in use, it will be difficult to convince medical men that the time is ripe for official propaganda. It is fair to state that, provided information may be disseminated from welfare centres to suitable cases, Dr. Blacker is in favour of a veto on certain unofficial methods of propaganda, such as newspaper advertisements.

It is regrettable that in an essay built on such broad historical and biological foundations a critical inquiry as to the origin of the most recent world war should have been included. Concrete examples are admittedly more persuasive than abstract ones, but the subject of contraception is already so controversial that it is best supported where possible by examples from the history of times other than our own.

## SURGERY.

*Die Chirurgie.* Edited by Prof. Dr. M. KIRSCHNER and Prof. Dr. O. NORDMANN. Berlin: Urban and Schwarzenberg. 1925. Vol. V., pp. 521, M.27; Vol. VI., pp. 358, M.21.

TWO further sections in the new system of surgery edited by Kirschner and Nordmann have reached us. Vol. V. deals with the surgery of the kidney, ureter, urethra, penis, testicle, and cord. In itself it forms a text-book of genito-urinary surgery, except for the omission of diseases of the prostate and bladder. Its outlook is continental, and for that reason is of value to English surgeons. The information given appears to be reliable and to follow the usual urological practice. Where there are debatable points the writer gives the facts without inclining to one or other view. For instance, on the question of radical extirpation of the lumbar glands in the treatment of malignant tumours of the testicle, Dr. E. Wehner, the author of this section, asserts that sufficient knowledge has not yet been accumulated to give a judgment as to the advisability of this course being taken. He is also conservative in his attitude towards excision of, or operations upon, the seminal vesicles in tuberculous disease of the urinary tract. The surgery of the kidney and ureter is written by Prof. P. Frangenheim with the assistance of Dr. Wehner, and is a very satisfactory section.

Vol. VI. contains descriptions of the surgery of the mouth, pharynx, and salivary glands by Prof. F. Brüning, and the surgery of the larynx and trachea by Prof. J. Soerensen. The section on the mouth and tongue runs on familiar lines and makes a good treatise on stomatology. In the account of the treatment of cancer of the tongue it is stated that the glands are removed first and the primary growth second. No consideration is given to the reversal of this process. A warning is issued against a too wide application of tonsillectomy, on the grounds that the tonsil has a function, and that to destroy this is undesirable unless there is sufficient cause for doing so.

The chapters dealing with the surgery of the larynx are among the best we have seen in this system of surgery. The account is complete and Prof. Soerensen speaks with the authority of a very large experience. He and Gluck together have performed 788 total extirpations of the larynx. The very high primary mortality has been reduced enormously, so that in one year only 2 out of 100 patients died as the result of the operation. In 120 patients it was necessary to remove the upper part of the œsophagus as well as the larynx, a procedure which increases the mortality to a very great extent, so that of these patients 24 died. The end-results when this large operation is performed are also bad, as only nine were permanently cured. This is the operation the authors recommend for disease of the sinus pyriformis. They regard removal of the growth by lateral pharyngotomy as advocated by W. Trotter in this country as quite inadequate. Laryngectomy has also been performed by them for tuberculous disease of the larynx, but the results do not seem to us to justify its general adoption as a method of treatment.

Both these volumes are illustrated by a large number of coloured as well as black-and-white prints. The high standard set by the former parts of this work has been well maintained.

### EVOLUTION.

*A Naturalist in East Africa.* By G. D. HALE CARPENTER. Oxford: Clarendon Press. 1926. With 25 illustrations, 8 plates of insects, and 3 maps. Pp. 182. 15*s.*

*Evolution.* By J. GRAHAM KERR. London: Macmillan and Co. 1926. With 2 coloured plates and 52 text figures. Pp. 278. 12*s.*

A BUTTERFLY-NET and a copy of Poulton's "Colours of Animals"—though we suspect that he carried this in his heart without burdening his pockets—gave Dr. Carpenter many happy hours while he was wandering about in Uganda and East Africa during the war, generally with no great burden of professional work. And his jolly book hands on a whiff of his gaiety to his readers; anyone with a feeling for natural history in the field will enjoy it and sympathise with the author's zest and excitement in a country which seems to be brimming over with life. And scattered all through are a diversity of observations of interest and many of importance. Dr. Carpenter interprets what he sees in terms of natural selection, and it is certainly impressive to read how he has sat down by a puddle and watched wagtails deliberately pick out one or two kinds from the varied assortment of butterflies which had gathered there to drink. The last chapter gives a full and well-illustrated account of a long series of experiments which he made on the likes and dislikes of a couple of tame monkeys for different insects. Altogether he has provided an excellent sequel to his "Naturalist on Lake Victoria."

Prof. Kerr tells the same tale in a different way. He has written a plain statement of what he believes about evolution and why he believes it. He learned his lessons, he says, in the open and in the tropics, and he has complemented this experience—which Darwin, Huxley, Bates, Wallace, Carpenter, and many others have found to be the unique experience of their lives—by a long and fruitful academic discipline in the laboratory. *Nullius in verba magistri* is a good motto, but the considered opinion of some people is bound to be received with more attention than that of some others; and we believe that this record of the matured results of such a wealth of observation and reflection will find a welcome in a world which has shown signs of being rather restless, and perhaps a little frivolous, about the "Origin of Species." The first five chapters deal with the facts of history, structure, and distribution which lead to the conclusion that evolution has really happened; the next four with heredity and its experimental study; the next with natural selection as the direct cause of evolutionary change; and the remaining five with adaptation, sexual selection, the evolution of communities, and man. In the main, Prof. Kerr adheres to the classical position: evolution is a fact; variability is inherent in all live things; the potency of natural selection is enormous, and the importance which Darwin attached to it has only been increased by the more recent knowledge of Mendelian inheritance, adaptation, and the coördination of the different parts of the body.

### COMPARATIVE PHYSIOLOGY.

By L. T. HOGBEN. London: Sidgwick and Jackson. 1926. With 44 text figures. Pp. 219. 7*s.* 6*d.*

APART from his own researches, Dr. Hogben has already made a useful contribution to the admirable movement for a wider physiological outlook which is represented by the Society for Experimental Biology and its journal by his Introduction to Comparative Physiology written in conjunction with Dr. F. R. Winton. The present book is the first of a series of text-books of animal biology edited by Prof. Julian Huxley, which will be popular if the succeeding volumes maintain the high standard and low price. It surveys in order the general physiology of muscular movement, ciliary action, respiration, nutrition, circulation, endocrines, nervous system, fertilisation, inheritance, and development. It is necessarily brief, but the author has a happy knack of compressing a great deal of information into a very readable narrative. Most physiologists and most zoologists—for it is meant for both parties—will learn something from it, and will probably feel that its chief defect is that there is not more of it. With special comparative physiology it does not pretend to deal; indeed, it will be a long time yet before each animal or group of animals will have a physiology of its own. Dr. Hogben's book will encourage the curious to set about the task of creating one. The page-headings want reconsideration; their utility and importance are often underestimated by book makers.

### PRACTICAL CLINICAL PSYCHIATRY.

For Students and Practitioners. By EDWARD A. STRECKER, A.M., M.D., Professor of Nervous and Mental Diseases, Jefferson Medical College, Philadelphia; and FRANKLIN G. EBAUGH, A.B., M.D., Professor of Psychiatry, University of Colorado. Philadelphia: P. Blakiston's Son and Co. 1925. Pp. 375.

PSYCHIATRY stands out as a most elusive and difficult branch of medical science, possessing little undisputed pathology or ætiology; very little is known of the causation of the majority of mental disorders, and their clinical pictures differ so widely that it is almost true that every patient has his own type of psychosis. Small wonder that of the many text-books on the subject, often admirable in other ways, hardly any is of much use to the student save as an academic introduction to the subject. These American authors have realised that a little practical experience is worth more than much study, and have taken the bold line of refusing to attempt any but the briefest theoretical annotation and general description. In default of *actually* conducting the student round the wards they come as near to it as possible, and instead of discussing the possible variations of every known form of disorder they select a number of the commonest complaints and describe an actual case of each one, chosen to present a clinical picture which shall be typical of the majority of cases of the same type, with full history and the detailed results of examination. It is obvious that they have only covered a small part of what its exponents understand by psychiatr but they have made that part both interesting and concrete. The book is not to be recommended as the sole text-book for candidates for examination, but the student will probably learn far more from these specimen cases than he would from any of the larger standard works. He will, moreover, gain a grasp of the outstanding features of the commoner types of mental disease that will enable him to connect his theoretical knowledge with the cases he meets in the wards or out-patients' department. For the rest, the classification is not admirable, as it seems to have little system underlying it and to be impossible to memorise; the English is turgid and the diagrams are obscure. The scheme of examination, however, placed early in the book, is thorough and practical; the bibliography is very complete, and there are several good photographs. The volume deserves to become popular not only with students but with general practitioners, social workers, and others whose occupation demands a practical rather than an exhaustive theoretical knowledge of this difficult subject.

## POPULATION.

By A. M. CARR-SAUNDERS. In the "World's Manuals" Series. London: Oxford University Press. 1925. Pp. 112. 2s. 6d.

*The Natural Increase of Mankind.* By J. SHIRLEY SWEENEY, D.Sc. With an introduction by WILLIAM H. WELCH, M.D. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. Pp. 185. $4.00.

*The Biology of Population Growth.* By RAYMOND PEARL, Director of the Institute of Biological Research, Johns Hopkins University. New York: Alfred A. Knopf. 1925. Pp. 260. $3.50.

ONE of the most insistent of post-war problems is that of population. Is Great Britain over-populated? Can birth control cure unemployment? Is population-pressure an important cause of war? These are some of the questions arising directly from the excogitation of recent and present political affairs. Expert witnesses are found in opposition, and feeling tends to run high when reformers disagree on matters of fundamental importance to the welfare of mankind. It is of all the more happy augury that men who have a scientific rather than humanitarian interest should be publishing at present the results of their careful research into the causes of population, growth, and the natural laws which govern the increase of the human race.

The popular handbook by Mr. Carr-Saunders, while no substitute for the valuable study which he published four years ago,[1] is an admirable introduction to the subject, and contains much useful statistical information. The diagram comparing the rates of growth of various European countries and of the United States is clear and interesting, although a fairer comparison of such rates would be obtained by plotting the millions of inhabitants upon logarithmic rather than on arithmetic scale.

Dr. Sweeney describes his book, prepared as a thesis for the D.Sc. in Public Health of Johns Hopkins University, as an Analysis of Population as a World Problem. It is "the most comprehensive world-wide study of this subject made in recent years by the application of a uniform statistical method." Dr. Welch says so, and his authority is not to be gainsaid. Indeed, the apparent care with which the author marshals authority, pro and con, on every issue that he raises, almost serves at times to obliterate his own personality. Yet he has his philosophy, and it emerges eventually in a scheme for an international agreement to control numbers by a league of stationary populations. He believes, as Mr. Carr-Saunders does, that our populations are growing too large, though his dislike of dense population is based on somewhat different considerations. Mr. Carr-Saunders sees a menace to the quality of life from over-urbanisation. His viewpoint here, as in other questions, is original and stimulating. Dr. Sweeney's chief anxiety seems to be the inevitability of international conflict if "relative over-population" is allowed to proceed—as, in the author's opinion, it almost certainly will. His suggestion is to make birth control not merely permissible, but even compulsory according to a scale fixed by concord between the competing powers.

The solution seems plausible enough in the context, but faith in its efficacy is rudely shaken by a perusal of Dr. Pearl's latest contribution to the biology of population growth. Herein, the inevitable laws formerly expounded in "Studies in Human Biology" are by further researches made to appear still more inexorable. A particularly striking example is the growth of the native population of Algeria. In that country no widely spread public health control can have affected death-rates, no artificial interference with conception can have slackened the birth-rate, yet the population climbs just as surely the mathematical slope of the logistic curve as in more civilised countries where water is never drunk without its due supply of chlorine, and where contraception, whether legal or illegal, has its innumerable devotees. Since Dr. Pearl read his paper to the Baltimore Conference on Birth Control in 1923[2] he has changed his mind somewhat on the menace of population growth. He no longer believes that a refusal to control the rate of reproduction will have the effect that "our children's grandchildren and great-grandchildren will probably see such an amount of suffering, a standard of living so lowered, as to make these parlous times seem paradise indeed." On the contrary, he takes comfort now from the thought that France "is a country with a population near the maximum for the present cycle. But he who thinks France an unhappy or wretched country is both ignorant and stupid." But France reaches her asymptote with a population less dense than that of England and Wales, though our country is still on the climb! Our slope is a steeper slope, and Dr. Pearl is keen to point out the great rewards coming to that biometrician who will determine for us the natural laws which dictate what slope the logistic curve of growth shall take for any particular people.

## GILLES DE RAIS: THE ORIGINAL BLUEBEARD.

By A. L. VINCENT and CLARE BINNS. Introduction by M. HAMBLIN SMITH, M.A., M.D., Medical Officer H.M. Prison, Birmingham. London: A. M. Philpot, Ltd. 1926. Pp. 221. 8s. 6d.

Gilles de Rais is one of the most outstanding examples in history of the sexual pervert, and although everyone has heard of him under the name of Gilles de Retz as the origin of the Bluebeard legend, he had but one wife, and his crimes were perpetrated, chiefly at any rate, against young men and lads. It appears that this is the first account in English of his horrible life, and the story is full though quite discreetly told. It shows the descent of a highly-born and enormously wealthy youth through profligacy to necromancy, and through foulness of all sorts to multiple murder. The degraded man at several stages in his career gave proofs of capacity for better things. More than once he proved himself a brave and capable soldier, was a valuable comrade in arms of Joan of Arc, and became a Marshal of France. He was also a great stage manager and the author of the libretto in some of the numerous pageants which he instituted. When at last his enormities brought their reward he met execution with fortitude, not attempting any apology for his crimes, and apparently believing that repentance in this world would stand him in the necessary stead elsewhere. A copious bibliography shows how many authors of medical and scientific repute have employed the Lord of Champtocé as an illustration of perversion.

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[1] Reviewed in THE LANCET, 1922, ii., 181.

[2] See Chapter III., Birth Control: Facts and Responsibilities. Edited by Adolf Meyer, M.D. Williams and Wilkins. 1925. $3.00.

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MINER.

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to the health of the employees, but improved housing should come concurrently.

The Commissioners recognise in frank terms that the industry presents for investigation and observation facts and factors so far hardly realised. More than 1,000,000 men and lads are employed under working conditions which, while broadly alike, differ in minor details on the separate coalfields. The mortality experienced by coal miners is fairly low; yet the Lancashire miner, with the South Wales miner not far behind, has a mortality nearly double that of his fellow in the Nottingham area. Now the Lancashire and South Wales miners have always manifested the greatest unrest as a class; unrest in the industry appears therefore quite clearly as a psychological expression of ill-being. The time at the disposal of the Commissioners was too short for them to await the result of investigations into such matters—to be conclusive, a research of years rather than of months would have been necessary—but the relation of unrest to mortality must be borne in mind as a practical as well as a humanitarian argument for reforms. Apart from accidents and industrial diseases there is no evidence to show that mining is not a healthy occupation. But the mining industry holds an unenviable priority with regard to the incidents and accidents for which compensation is made, as well as for occupational diseases, and the work already undertaken by the Medical Research Council should be recalled in connexion with the Report. An expert committee of the Council has already issued reports on many diseases incidental to miners, and is continuing its researches into miners' nystagmus, which accounts for more cases, and a larger sum paid out every year, than all other compensation diseases taken together. The conclusions here do not clash with those arrived at by Mr. POOLEY in an article which we publish this week, and all observers seem agreed to consider the pathology of the disease still not clear, and its occurrence not of the sinister importance that might seem postulated by the money paid in compensation. Beat-knee, -hand, and elbow, which stand respectively second, third and ual fourth with lead poisoning in the list of occupa-
nal diseases, have also been considered by the
dical Research Council's committee, and an inquiry
o the relation of lost time to sickness at different
llieries is under weigh. Another research is dis-
ing the existence, previously only dimly suspected,
silicosis among a small group of underground men
use pneumatic drills on hard rock; while the
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also being closely studied. Meanwhile the Safety
Mines Research Board, financed from the Welfare
d, is covering a wide and comprehensive field of
rch aimed at preventing explosions and render-
mining work less dangerous. The activities
urated by the Fund are praised by the Com-
ners; already their influence can be traced in
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of all concerned as well as their willingness to make sacrifices, but no economical reform which fails to take the health of the miner into consideration has the slightest chance of life, and but little chance of being born alive. How far the various pathological conditions are due to or are promoted by bad housing, and what relation there may be between bad environment and the occurrence of accidents, can only be subjects of rough estimate. The numerous points could not well be summarised to make a reference for a body of expert inquirers, but apart from the quite possibly mischievous influence of bad housing upon the mining industry, in particular all medical men will feel that the housing conditions of the miners must be remedied. These conditions are often very bad. The Report sets out what is indeed common knowledge. Many of the old mining villages consist of poorly constructed cottages, small and frequently overcrowded, with sanitary arrangements that are primitive and inadequate. This, though shocking, is readily to be understood when we remember that the mining village was often built to serve a temporary purpose; and it is right to say here that some of the new colliery companies have planned for the miners well-constructed and well-equipped garden villages, while in districts where the housing is usually poor there may be found groups of excellent new cottages built by enterprising proprietors or local authorities. In certain collieries the influence of the free colliery house is baleful; the great majority of these houses are atrocious, and they have set a low standard for the whole of the housing in Northumberland and Durham. There is thus every gradation between good and bad housing, but the merits of the good do not cancel the evils of the bad. The necessity for a levelling-up of the housing conditions of miners is paramount, and we trust that it will be kept steadily in the minds of those who have now to deal with the anxious and complicated situation.

## THE RISKS OF HYPOTHESIS.

In his Goulstonian Lectures, which are appearing in our columns, Dr. Bernard Hart opens up a wide subject when he lays down principles by which the claims of scientific hypotheses, especially concerning psychopathology, can be tested and appraised. Mankind has an innate desire to know, and in satisfaction of this desire the most primitive races produce speculations belonging to the conceptual as opposed to the perceptual level. There is every gradation between the simple speculation of the savage and the complex hypothesis of the man of science; each is arrived at by the pressure of the same psychological motive, each would appeal to the tribunal of experience, and in the case of each there is felt a sense of power when a new generalisation is made. Danger lies in this sense of power, for its gratification may lead to a specious appearance of knowledge when knowledge has not yet been attained; the man who believed thunder to be the voice of an offended deity probably felt immensely superior to the ignoramus who lacked that explanation.

Dr. Hart, perhaps, had in mind such a danger when he warned us that the desired consummation of reducing the concepts of psychology to the wider concepts of physiology is brought no nearer by pretending that it has been attained. He gives the three successive steps, as enunciated by Karl Pearson, which distinguish the scientific method, and makes the claim that it is the method, not the material handled, which characterises science. These steps are the collection of facts, their classification, and finally the construction of conceptions which serve to explain them. Scientific canons, ensuring that each step is kept in close contact with observation, are needed to check the primitive tendency to believe that any hypothesis is better than a confession of ignorance, for at each step there may be only a semblance of scientific method; the facts may be wrongly observed, their collection may be inadequate, and the generalisations may be premature. Perhaps the commonest error has been to leap to a final conception before the observation and collection of facts are sufficient, and this error plainly arises from the strong desire to believe that we know. When we act upon such a premature hypothesis, our results are probably futile and the greatest evil may lie in the arrest of inquiry. A notable result of the hurried leap to a conclusion is found in the case of hysteria. Attributed, on observations not entirely baseless, to the wanderings of the unsatisfied uterus, hysteria came to be treated with evil-tasting drugs intended to drive that organ back to its proper place, and, although this therapeutic aim has been lost, the use of the drugs has survived. A fuller collection of the facts upon which the theory was thus inadequately based might have led our professional forbears to anticipate some of the findings of modern psychopathology, but it is likely that even in the days of Galen there was a tendency to seek in physiological terms for a satisfying explanation of psychological phenomena. Such survivals as lunacy, melancholia, and hypochondria indicate the range of this tendency, and the use of concepts like nerve exhaustion and brain fag still satisfies the desire to believe we know the unknown.

Yet, as Dr. Hart points out, we are not prevented from using a working hypothesis which is independent of phenomenal reality. Although its existence is not a fact of experience yet the scientific conception of the ether is most fruitful; and the theory of the indivisible atom produced discoveries which led to its own downfall, thus demonstrating, by a curious paradox, at the same time both its value and its invalidity. Psychology, like other sciences, has produced numerous hypotheses. Faculty psychology has proved barren; intellectualist psychology has proved erroneous; instinct psychology provides little more than a collection of algebraic expressions useful for resuming facts under convenient headings; suggestionist psychology, as Dr. Hart shows, has proved disastrously soothing. It seems that the hypothesis of the unconscious has now become fruitful after a long period of relative futility. Framed to account for curious phenomena which fell outside the bounds of ordinary rational experience, it received no further definition for many years until Freud found it indispensable to explain a large number of newly observed facts. It is certainly free from the appeal to a desire for easy explanations, and, though this places it at a disadvantage when confronted by more facile hypotheses expressed in terms of the concrete, yet this freedom should encourage us not to evade its difficulties in favour of more alluring, because more facile, speculations.

## THE CARDIAC CLINIC.

We referred recently to the work of the American Association for the Prevention and Relief of Heart Disease and to their official publication, the *American Heart Journal*. In the *New York State Journal of Medicine* for Nov. 1st, 1925, Dr. John Wyckoff discusses the scope and organisation of clinics for the treatment of cardiac cases. He points out that any special clinic must necessarily overlap fields of medicine other than that to which it is particularly devoted, and consequently it is essential for the cardiac clinic to be in close touch with other departments, such as the venereal clinic, the oto-laryngological clinic, and the dental clinic. In addition, there should be available the laboratory facilities of a large general hospital, both for pathological investigations and for special studies, such as X ray and electro-cardiographic examinations. Dr WYCKOFF emphasises the importance of close association of the clinic with an in-patient department, not only in the interests of the patients, but also on account of its instructive value in enabling the young physician to study the different aspects of heart disease. As he aptly puts it, "in the ward one sees but a small cross-section of the cardiac's life, whereas in the ambulatory clinic one learns the course of chronic heart disease, its management and treatment." Very few, if any, physicians can hope to keep in close touch with the recent advances in all fields of medicine, and if patients are to get the benefit of these advances, specialisation is a necessity On the other hand, the specialist must work in the closest coöperation with those of his colleagues whose interests lie in other fields.

The functions of the cardiac clinic are to keep the ambulatory patient with organic heart disease in the best possible health for as long a time as possible; this involves first a full and accurate diagnosis and, secondly, treatment. The diagnosis comprises not merely the structural and functional considerations, but also a careful survey of the social conditions, environment, and habits, as well as the financial status and responsibilities of the patient Unless these latter points receive due consideration, the actual medical treatment cannot yield the best results. For this purpose the staff of the clinic have to rely principally on the social service branch, whose members visit the patients in their homes and are in a position to furnish the necessary information on these points to the medical officer. In order that the social service workers may not waste their time in attempting to cover too wide an area, any one clinic should confine its attentions to such patients as live within easy range of the hospital, and when a patient moves his residence he should be transferred to another clinic. The staff of the clinic includes a clerical section composed of lay workers, whose duty it is to relieve the medical staff of all non technical matters, and to facilitate the following up of cases and statistical research by an efficient system of record-keeping and cross-indexing As cases come up for re-examination it should be possible to obtain the latest data concerning their progress and the results of previous treatment, in order that these may be carefully reviewed before the future line of treatment is decided upon A regular routine in the examination of patients is essential where large numbers of patients are being dealt with, and the method which has been adopted at the Belle Vue Hospital is as follows. At the first visit the patient's history is taken, he is examined, and temporary treatment is instituted The social service worker then visits his home. The following week special examinations of the nose and throat, electrocardiogram and X ray are made, while on his third visit he is seen by the dentist, and the physician in charge has at his disposal the full information necessary to enable him to institute a permanent line of treatment.

Dr WYCKOFF raises an important point with regard to the transference of patients from the children's to the adult clinic. It is at this stage that patients are most liable to be lost sight of, and he suggests that the best remedy is to form an intermediate adolescent clinic which will take them over at the age of 16 and subsequently transfer them to the adult clinic at the age of 18, when they are more likely to realise the importance of continuing their attendance. The writer points out the importance of differentiating between cases which are likely to benefit from a period in a convalescent home from those which cannot have any reasonable hope of building up their cardiac reserve by convalescent treatment. For although these latter may be able to live within their cardiac reserve for several months while at the convalescent home, sooner or later they are bound to become bed cases. They occupy accommodation at the convalescent home without the prospect of deriving any corresponding benefit therefrom, and provision should be made for them in the form of a hospital for permanently disabled

The work which is being done by the cardiac clinics in America is of economic value. It enables those who are the subjects of heart disease, but still able to work, to obtain expert advice and treatment, and so diminishes the wastage from this cause during the most productive period of life

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## THE JOINT TUBERCULOSIS COUNCIL.

IN the general development of tuberculosis work which followed the provision of sanatorium benefit and the appointment of tuberculosis officers a need was apparent for close coöperation between the many and varied bodies and individuals concerned. But such coöperation, with resulting coördination of effort, was not by any means easily attainable. Although consultants, tuberculosis officers, research workers, medical superintendents of sanatoriums, and others all had their own circles of interest and information, those circles and their societies had few opportunities for effective joint discussion of common problems or for common action. In order to meet this state of affairs the Joint Tuberculosis Council was set up, and has gone far to remedy the defects of organisation. The Council comprises representatives of practically all societies, associations, and Government departments actively concerned in tuberculosis work. It meets quarterly, or more often as may be required, and the considerable amount of work it has done since its inception in March, 1924, shows that the meetings are not merely formal A special committee has taken in hand projects for collective research, keeping in touch with the Medical Research Council Post-graduate courses have been held (some of which are announced on page 790), and are being further developed Evidence has been given before the Royal Commission on National Health Insurance; and such subjects as the employment of tuberculous persons have been considered in practical detail The whole object of, and justification for, the Council is the attainment of coöperation and coördination amongst all tuberculosis workers With such an object and such practical evidence of useful work already performed the Council is to be welcomed as a valuable addition to the antituberculosis forces of the country. Sir HENRY GAUVAIN is the chairman, and Dr E. WARD the hon secretary

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AN election to the Council of the Royal College of Surgeons of England will be held on Thursday, July 1st, 1926 There are four vacancies, and the following 12 have signified their intention to be candidates: Mr E. W. Hey Groves, Sir Herbert Waterhouse, Mr. Warren Low, Mr. W. E Miles, Mr. H J. Paterson, Mr Victor Bonney, Mr. J. P. Lockhart-Mummery, Mr Philip Turner, Mr C. A. R Nitch, Mr. Hugh Lett, Mr G Grey Turner, and Mr. C. C Choyce Prof. Hey Groves, retiring from the Council in rotation, is standing for re-election.

# Annotations.

"Ne quid nimis."

## PNEUMOCOCCAL PERITONITIS.

Pneumococcal peritonitis was selected as the subject for the Ingleby Lecture for 1924 by Mr. A. W. Nuthall,[1] and the disease was also discussed at a recent meeting of the London Association of Medical Women's Federation, reported in THE LANCET last week. It is an interesting affection from several points of view. It is arresting in its rapidity of evolution in the fulminating cases, and very often tragic in its inexorable progression towards death in those protracted cases where there seems at least reasonable grounds for anticipating a happy issue. Sometimes the disease appears to be a primary peritonitis, at others it is secondary to a pneumococcal infection elsewhere. The path by which the organism reaches the abdominal cavity in the idiopathic cases is a matter of controversy. J. Fraser and J. E. McCartney[2] brought powerful evidence forward to show that infection takes place from the vagina by way of the Fallopian tubes. They have never seen the primary form in boys in whom the condition seems always to be a sequela to a severe pneumococcal infection elsewhere in the body. They found that in early cases the most advanced changes were at the bottom of the pelvis. Mr. Nuthall does not agree with this view. In two of his patients careful bacteriological search failed to reveal pneumococci in the Fallopian tubes, and he has seen cases in boys where there was no clinical evidence of a visceral lesion to which the disease could be said to be secondary. He believes the peritonitis to be always due to a septicæmia and that the portal of entry is in all likelihood the pharynx. Clinically, pneumococcal peritonitis is characterised by a peculiar absence of the local pain, local tenderness, and local rigidity of other forms. The patient is much more ill than the local symptoms seem to indicate. The bad prognosis would seem to be related with the blood infection; the victim has to overcome a septicæmia of which the peritonitis is only a symptom. The diagnosis is admittedly difficult at first and, the disease being rare, it is unlikely to be prominent in the mind of the practitioner. Some clinicians have been able to demonstrate pneumococci in peritoneal exudate obtained by paracentesis with a fine hollow needle.

The outlook in the disease is so bad that it is not surprising that dissatisfaction with methods of treatment exists. McCartney and Fraser recommend blood transfusion as an accessory measure, and this seems to have proved a powerful weapon of offence. They also recommend early operation as giving the best prospect of cure. Nuthall, on the contrary, thinks operation in the early stage to be not only useless but positively harmful, and compares the condition with acute empyema where delay until frank pus forms has proved to be the better course. He recommends the surgeon to wait until the acute toxæmic stage is passed. Miss Gertrude Herzfeld, at the meeting referred to above, declared that drainage of the lower abdomen was the only possible treatment and that blood transfusion had not proved of much avail. There would, therefore, seem to be room for further investigation in this peculiarly fatal disease.

## A SCIENTIFIC ANNIVERSARY.

This month 25 years ago, writes our Swiss correspondent, Dr. Oscar Bernhard, then medical officer of the Engadin District Hospital at Samaden, made his first experiments with sunlight treatment. He started on purely empirical lines. To him, as an old Engadiner, the method in use amongst the inhabitants of his country of preserving meat and specially bacon by hanging it in the dry air and in the sun was well known. The antiseptic and drying effect of the sun's rays as shown in this method led Dr. Bernhard to try its use on living tissue. The first patient to give him an occasion for this experiment was an Italian with a large open wound which was proving refractory to the usual treatment. On a beautiful day when the sun's rays filled the hospital ward, Dr. Bernhard ordered the wound of his Italian patient to be exposed to air and sunshine. The success of this treatment was a surprise to everyone. The granulations quickly became normal and epithelisation began to take place. Many other experiments followed, the method was scientifically enlarged, and to-day heliotherapy is an established practice. The splendid experiences with the new method in the Engadin were soon tried in other suitable places, especially by Dr. Rollier at Leysin.

## INTRAPERITONEAL INFUSION OF INFANTS.

THE most essential therapeutic measure in the treatment of severe intoxications in infancy consists of the avoidance or removal of dehydration, to which infants are peculiarly susceptible and readily succumb. The administration of fluids by the mouth, except in very small quantities, is usually difficult in the presence of even a moderate degree of toxicity; in many conditions it is rendered uncertain by the vomiting which it provokes or by pre-existent diarrhœa. Intravenous infusion is contra-indicated by the difficulty of the procedure and the damage to veins which may ensue. Rectal enemata are not retained with any degree of certainty; if the rectal route is adopted it is necessary to employ the method of continuous enteroclysis, which has many advocates and is generally satisfactory when the need of fluids is not urgent or prolonged. The absorption of fluids by this method is somewhat slow, and if it is continued for a long period the tube may cause irritation of the mucosa. In cases of severe dehydration—particularly those occasioned by alimentary decomposition—the choice will usually lie between the two methods of subcutaneous and intraperitoneal injection.

The advantages of the subcutaneous route are obvious; it is simple and easy, no question of damage to organs can arise, and the result of any flaw in the aseptic precautions should not be unduly serious. As an emergency measure under unfavourable hygienic conditions it is clearly to be preferred. It has, however, been the experience of many physicians that the results which it yields fall far short of the ideal. It is difficult to introduce more than about 50 c.cm. of fluid without causing local discomfort to the infant, and there may be considerable leakage through the needle track. The rate of absorption is very variable, and in comatose infants may be too slow to be effective. There is little doubt that in all cases where a rapid absorption of a considerable amount of saline is desired, the intraperitoneal route will best meet the requirements. Like most ideal methods, intraperitoneal infusion makes greater demands on the technique, and perhaps the courage, of its employer. The two possible objections to it are the risk of infection and the risk of damaging an abdominal organ. The first is a very real one; the adoption of this method is only justifiable when strict aseptic conditions can be obtained. The second risk appears to have presented less difficulty than might have been expected, and can be obviated by suitable technique. There is undoubted danger of injury if a sharp straight needle is used. Weinburg devised a method for which excellent results have been claimed. He used a needle with a comparatively blunt point, inserting it at a spot corresponding to McBurney's point on the left side. He was able to introduce up to 200 c.cm. of fluid without causing any inconvenience to the infant, and in no case was there any injury of underlying organs. He established the fact that absorption was very much more rapid than in subcutaneous infusion. Aikmann drew attention to the risk of injuring the bladder, and inserted the needle immediately below the umbilicus. A disadvantage of Weinburg's technique lies in the necessity of a preliminary incision of the skin, owing to the bluntness of the needle. This drawback appears to have been overcome by Dr. I. W. Gallant and Dr. R. M. Gordon, who have devised a sharp-pointed curved needle with the aperture in its convex surface. This needle, an account of which was given in THE LANCET of March 27th, p. 000, is passed through a fold of abdominal wall which is drawn up by the finger and thumb. This procedure should prove to be a distinct improvement, and is worthy of trial by all who use the peritoneal route.

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[1] Birmingham Medical Review, March, 1926, p. 103.
[2] Brit. Jour. Surg., 1922, ix., 479.

The benefit obtained by the introduction of saline is established beyond all doubt, but on the question of the efficacy of nutrient infusions there is not the same degree of unanimity. It has been a common practice to add glucose to the saline, and there is experimental evidence that it is absorbed; it is therefore undoubtedly a rational therapeutic measure. The introduction of blood serum has been tried and does not appear to be followed by any undesirable reaction. The improvement brought about by saline infusion alone is so striking that it is difficult to obtain clinical evidence of the extent to which the addition of nutrient material may have participated in the result. Infants tolerate starvation so well, and dehydration so badly, that this question is particularly hard to decide from the results which they yield.

## MASSIVE DOSAGE WITH DIGITALIS.

THE value of the method introduced[1] by Prof. Cary Eggleston, of New York, for the treatment of acute heart failure associated with auricular fibrillation by the oral administration of massive doses of digitalis has not yet been fully appreciated in this country. Why in such cases we should be content to wait several days before achieving the full therapeutic effect of the drug, when it can be obtained with safety in 24 hours, is difficult to understand, unless it be on account of the idea that digitalis is a dangerous drug. Most potent drugs are dangerous if improperly used, but the toxic manifestations of overdosage with digitalis are so well recognised, and the precautions necessary to avoid misadventure are so simple, as to leave no reasonable cause for anxiety. To continue to give digitalis after the heart rate has already reached a subnormal figure, or after bigeminal heart action has set in is to court disaster; but with these clear signs in addition to the gastro-intestinal danger signals as a guide, there is little cause for apprehension. Again, the rate of absorption and elimination of digitalis has been accurately determined, and by allowing an interval of six hours to elapse between doses, any possible danger from cumulative action can be excluded.

In the February number of the *Edinburgh Medical Journal* Dr. A. Rae Gilchrist summarises his experience in 60 cases of auricular fibrillation with heart failure treated by digitalis in massive doses. When the condition of the patient was not urgent, the administration of digitalis was preceded by a control period of rest in bed for several days. The drug was given in the form of the powdered leaf, the full quantity as calculated from Eggleston's formula being divided into three doses given at four-hourly intervals. Dr. Gilchrist states that in most cases there was marked slowing of the heart six hours after the first dose, and that the maximal effect was produced in less than 24 hours, except in those cases where there was much portal congestion, when it was frequently delayed for 48 hours. The slowing effect of the digitalis persisted in most cases for from two to ten days. Dr. Gilchrist points out that the toxic dose of digitalis is very close to the therapeutic dose, but in the rheumatic cases of his series there were no severe toxic manifestations, nor were there any disorders of rhythm apart from occasional extrasystoles. In four patients with normal rhythm, however, auricular fibrillation was induced by the administration of massive doses of digitalis; in two of these the normal rhythm returned spontaneously. Toxic manifestations were more prone to occur where fibrillation was associated with arterio-sclerotic type of myocardial disease. Bigeminal heart action was frequent in this group, and in one case digitalis provoked an attack of paroxysmal ventricular tachycardia. Dr. Gilchrist considers that in urgent cases of heart failure the oral administration of massive doses of digitalis is less dangerous than the intravenous administration of strophanthin. His conclusion that this method of treatment finds its most useful place in cases of auricular fibrillation occurring in the subjects of rheumatic heart disease is in accord with clinical observation elsewhere.

## SURFACE RADIUM-THERAPY.

IN ordinary superficial applications of radium the tissues at a depth receive some of the penetrating gamma rays from radium C which always accompany the beta rays coming away from applicators containing radium or radon in equilibrium with its active deposit of "quick change." In some instances, no doubt, the degree of the reaction of a superficial region thus treated depends upon this gamma-irradiated region, and in the case of human skin reactions it has been shown by Mottram and Russ that if two neighbouring regions of the skin are given equivalent surface intensities of beta and of gamma radiation, that due to the gamma radiation will be more profound in character—the inference being that, although the superficial intensities are the same the structures below the gamma ray surface are more heavily irradiated and contribute to the surface reaction. Perhaps in some skin conditions it would be a good thing if the deeper structures were entirely spared irradiation while a dose is being given to the surface. The method of using the radium active deposit of "slow change" described by Mr. J. P. McHutchison and Dr. W. H. Brown on page 755 of this issue will allow of this being done; for although two of the products used—namely, radium D and radium E—emit gamma rays, they have very little penetrating power; in fact, the combined beta and gamma rays from the preparations used are reduced to a very small percentage of the surface intensity by traversing 8 mm. of tissues. These radio-active preparations may be looked upon, therefore, as giving out radiation only equivalent in penetrating power to very soft X rays and of very weak intensity. Apparently the strongest applicators yet used by the authors gave an erythema of the skin only after seven to eight days' continuous application. It will be of interest to know, as clinical material accumulates, whether the skin reaction is of the same character as results from intense beams of X rays or of ordinary radium sources where the exposures are often a matter of minutes. Recognisable differences would be expected when the intensity is so much reduced, even though the physical dose is identical. Valuable information is given by the authors about their methods of retrieving the active deposit from used radon supplies. This has been a work of scientific economy and will doubtless be made use of at centres where radon in quantities is used.

## SWEATING.

"MAN," said Richard Owen, "is naked and is the only terrestrial mammal in that predicament." He also has an unrivalled power of sweating, and the known and unknown meanings of this capacity are enough to make the study of those rare individuals who cannot sweat a matter of some interest. In the *Journal of Biological Chemistry* (vol. lxvii., 1020, p. 307) Dr. H. B. Richardson describes some calorimetric studies on a case of congenital absence of sweat glands. The boy's practical trouble was that he could not play in summer because he got too hot and had to stop, and he seems to have found out for himself that if he wetted his shirt he could exercise with less discomfort. Detailed examination of his heat production and water elimination under various conditions led to interesting results. The water vapour given off at rest was normal and the evaporation of water accounted for the normal proportion of heat loss. More than two-thirds of the water came from the skin, and it seems clear that considerable quantities can be eliminated through the skin without the intervention of sweat glands, which are apparently not responsible for "insensible perspiration." Under exercise the quantity of heat lost by water vapour was definitely less than normal and the body temperature rose; in hot air also there was no increase of water loss and the temperature rose rapidly. From which it appears that sweat glands have developed to supplement the evacuation of water vapour through the skin; they are not absolutely necessary, and constitute an emergency apparatus which, like some other body mechanisms, becomes progressively less essential as conditions of life and survival become easier.

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[1] Amer. Jour. Med. Sci., 1020, clx., 023.

## CHILD WELFARE IN THE UNITED STATES.

IN an address recently given in Birmingham at a meeting of the Maternity and Child Welfare group of the Society of Medical Officers of Health, and now appearing in *Public Health*, Dr. Ethel Cassie gave an account of a three months' visit to some of the great eastern cities of the United States. The visit was undertaken in order to study the work done on behalf of women and children, whether carried out by States, by municipalities, or by private bodies. The vital statistics for the United States are, on the whole, distinctly more favourable than are those for England and Wales, the birth-rate being higher (22·5 as compared with 20·4) and the general death-rate and infant mortality-rate lower (11·4 and 76 as compared with 12·8 and 77). Dr. Cassie believes the chief cause for this difference to lie in the absence of any serious degree of poverty in the United States, and in the much better standard of housing. The public health service appeared to her to be less well organised than our own, and much less inclusive, except in regard to propaganda. The Children's Bureau at Washington, while possessing its own staff for direct investigations, carries out most of its work through the directors of child hygiene in the various cities and States, the general organisation in each differing very little. In New York the municipal work is on a more limited scale than in our own country, but this is compensated for by the large number of voluntary agencies employing large staffs of highly trained workers and carefully coördinated in order to avoid overlapping.

The conduct of the welfare clinics, of which there are 94 in New York, differs little, if at all, from those in this country, the doctors attending twice a week and advising only on questions of diet and hygiene. The clinics are open to children up to 2 years of age, and not, as here, right up to the age of 5. The midwifery service of New York includes 300 licensed midwives, who attend 26 per cent. of the births. None of these, however, is a trained nurse. The midwives notify ophthalmia neonatorum and puerperal sepsis, but no other notifications are made. Doctors and nurses act as inspectors of midwives. The Maternity Centres Association takes a large proportion of the antenatal work in New York; maternity nurses are provided by this Association for a fee of £5, and the infant is visited up to six weeks of age. An important feature of welfare work in the United States is the establishment of special clinics which appear to have been brought to a high pitch of efficiency. Examples of these are the nutrition clinics, to which children suffering from malnutrition are referred from other centres; the heart clinic in New York, which deals with cases of actual or incipient heart disease in children under 12 years; the posture clinic, in which remedial exercises are taught and carried out for such minor orthopædic defects as flat-foot or knock-knees; psychological clinics for children from 3 years old and upwards; and, in Boston, a neurological clinic, where an elaborate system of muscle training by voluntary exercises has been instituted for infants and young children suffering from birth injuries, the sequelæ of poliomyelitis, and the like. Dr. Cassie draws attention to the somewhat anomalous position of the midwife in the United States. There is no training in midwifery apart from the simple maternity nursing included in the general training of a nurse, and the very existence of the midwife seems in many places, notably in Massachusetts, to be ignored. The maternal mortality-rate, doubtless partly in consequence of this attitude, is everywhere high—e.g., in New York the rate is 6 per 1000 live births, as compared with 3·9 in England and Wales.

Methods of infant feeding varied a good deal in the different places, but apart from the greater use made of thick cereal feeds and lactic acid milk, and the comparatively limited use of dried milk, no great differences were noted from the methods adopted in our own country.

## CRAWFORD WILLIAMSON LONG.

THE Crawford W. Long Memorial Association has just unveiled a statue of Long in the Capitol at Washington, the ceremony taking place on March 30th last, the eighty-fourth anniversary of Long's discovery. It is particularly right that this great man should receive public notice because of the singularly modest and disinterested part which he played in the polemics which have marked discussions upon the introduction of anæsthetics. A sympathetic memoir of him will be found in the first volume of THE LANCET of 1912, written by Dr. Dudley Buxton, consulting anæsthetist at University College Hospital. The memoir fully makes out the claim of Long to be the pioneer of anæsthesia and the first to suggest and employ ether inhalations during surgical operations. Dr. Dudley Buxton says: "While disputants, claiming for themselves or their friends the plaudits due to great discoverers, rent the welkin with their angry cries and clamoured for a material solatium, one man, Crawford Williamson Long, reputed to be actually the first to produce artificial anæsthesia by inhalation of ether, was content to stand aside, calm and dignified, as one who strove to benefit his race while seeking for himself neither guerdon nor worldly honour." In dealing with the question of the rival claims to the honour of introducing ether to the medical profession, the founder of THE LANCET 80 years ago spoke with characteristic vigour: "Many persons have suggested certain sniffings and breathings, and have employed them in private in a few slight cases; but these we may pass by as unworthy of notice—certainly not detracting in the least degree from the praise and honour due to the American originator, whether that originator be Dr. Morton, Dr. Jackson, or Mr. Horace Wells, the last claimant." Only a few weeks after this pronouncement documentary evidence came to THE LANCET substantiating the claim of Horace Wells for the use of nitrous oxide gas for tooth extraction prior to the work of W. T. G. Morton, but at this time the name of Crawford Long was still unknown in England, and indeed was but little known in his own country. His reticence seems to have been due to his perceiving that his methods needed carefully working out, while he held it improper that experiments should be made upon any but suitable patients. When the successes of Wells, Charles Jackson, and Morton became known, with the result that a controversy arose between these three, it appears at the time to have occurred to no one that, while they could settle the second place among themselves, the first place belonged to Long. Dr. Dudley Buxton in his essay supplied a facsimile of a letter from Long dated Feb. 1st, 1842, in which he alludes to being "utterly out of ether" and to intending to use it for anæsthetic purposes in the future. This date is some two years earlier than any date claimed for the discoveries of the other three.

## THE COLLEGE OF NURSING.

THIS week an appeal is being made to the medical profession to help in the endowment of the College of Nursing. There are many who will gladly respond to this appeal because it is an opportunity to express the admiration so widely felt for nurses and their work. None have a better chance of understanding the value and quality of that work than medical practitioners; none comprehend better the conditions of service and remuneration under which nurses still work; none therefore are more anxious to assist in anything that makes for their welfare. To ensure support from the medical profession it is, therefore, only necessary to show that the College of Nursing has a real function and fulfils a real need. When it was founded in 1916 its objects were these: to provide a central organisation for the nursing profession; to raise the standard of training and examination of nurses; to promote the higher education of nurses; and to attract to the profession the best type of woman. There are now 24,000 nurses on the College Register who have complied with the regulations for entry, and the College is recognised by the Ministry of Health as a training centre for the Health Visitors' certificate and is consulted on nursing affairs by Government departments and public bodies. There are 41 branches, seven residential and other clubs, and two convalescent homes at which members may stay at very small charges. Scholarships are awarded for post-graduate work; there is a Loan Fund which has been of assistance in many cases, and there is a special scheme for insurance against sickness and accident. The College's scale of salaries for all grades and branches of the nursing profession is being increasingly adopted by hospitals and employing authorities, and the College has been instrumental in obtaining an amendment to the Unemployment Insurance Act by which all trained nurses and nurses in training are exempted from its provisions, which were a considerable burden upon them. A Student Nurses' Association is a recent development, for the benefit of nurses in training for the general part of the State Register, and the work of the Public Health Section and the Sister Tutor Section are already well known.

The work of the College is steadily expanding. It is governed by a council elected by the members by a postal vote. There is no restriction on membership of the council, and at present there are a number of medical men upon it who are making the appeal referred to. The cost of management, they state, is nearly £5700 a year, and the deficit on each year is considerable, and has to be met out of the General Fund and the interest from the Endowment Fund, which now stands at £67,000. Although the College is in important respects comparable to the colleges of other professions, it is unlike them in that most of them have benefited by the endowments of their founders and by legacies. Apart from the gifts of Viscountess Cowdray, who presented the building near Cavendish-square, and has founded several scholarships and annuities, the College has had to rely on certain earmarked amounts subscribed by the public in the appeal for the Nation's Fund for Nurses and on the donations and subscriptions of its members. Over £35,000 has been subscribed by members and their friends, who have worked extremely hard to get it. By themselves they can hardly hope to secure the further £33,000 which is needed to bring the total up to the £100,000 required, and that is why the appeal is being made to the medical profession. Even the smallest subscriptions will be appreciated; they may be sent to the hon. treasurer, Mr. Comyns Berkeley, or direct to the College, Henrietta-street, W. 1. Largely by subscription in answer to personal appeals by the treasurer about £950 has already been collected, and we hope, if possible, to publish a list of donations in due course in order to further this excellent object.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXVIII.—THE TREATMENT OF LUPUS ERYTHEMATOSUS.

Lupus erythematosus still remains one of the most intractable and capricious of skin diseases. Its name is unfortunate and misleading, as it suggests a relationship with lupus vulgaris, from which it is quite distinct. Of its synonyms the most appropriate is erythema atrophicans, a name given to it by the late Sir Malcolm Morris, which more nearly suggests its nature than that by which it is generally known. Its treatment is best considered under two headings—namely, the treatment of the acute, disseminated type, and that of the more chronic, circumscribed, or discoid type, which constitutes about 80 per cent. of all the cases.

Rational treatment should be based on ætiology. Unfortunately, the ætiology of this disease still remains unsettled. In my opinion lupus erythematosus is not a pathological entity in the true sense, like psoriasis, and due to one specific cause, but is rather a morbid cutaneous condition, of the type of an erythema, which is persistent in character, tends to be succeeded by atrophy, and may be called forth in a predisposed individual by a variety of causes of a toxic or septic character.

Of the predisposing causes, the most important is a delicate condition of the skin, either from hereditary weakness, general morbid conditions, such as tuberculosis, or a weak peripheral circulation, the common situation of the lesions being largely determined by anatomical reasons, such as the stretching of the skin over bone or cartilage. The actual cause is the circulation in the skin of some toxin, either resulting from the impaired action of diseased organs, such as the kidneys or the liver, or possibly originating in some septic focus in the mouth, about the throat or bronchi, or in the alimentary tract. Local influences, such as cold, sudden changes from heat to cold, traumatism, insect bites, or local microbic action, have an important bearing in determining the localisation of the disease.

### *Acute Disseminated Cases.*

*General Measures.*—These cases are so obviously toxic that their treatment resolves itself largely into an endeavour to discover the source of the toxæmia, and to deal with it on general medical principles. The patients are, as a rule, seriously ill, and require confinement to bed. In a fatal case recently under my care at Charing Cross Hospital, the toxæmia was found to be of streptococcal origin, the *Streptococcus longus* being recovered from the throat, which was in a horribly septic condition, and from the urine. After a prolonged illness death took place from acute septicæmia. In another case the eruption appeared in association with Bright's disease, from which the patient died. Other cases have been associated with alcoholism, cirrhosis of the liver, and rheumatism. Where a microbic origin is proved, the microbe being generally a streptococcus, injections of an autogenous vaccine should be tried, but their value is uncertain. Where the actual toxin is not discovered, and an appropriate antitoxin not available, various drugs are reputed to have an antitoxic action. Of these salicin and quinine have given the best results. Salicin should be prescribed in large doses of 15 to 30 gr. three times a day, and in a mixture containing also powdered tragacanth and peppermint water; a few minims of the tincture of nux vomica may be added to counteract the depressing action of the salicin. Quinine also should be given in large doses of 5 to 10 gr. It may be injected intravenously once a week in the form of the hydrochloride, gr. 5, dissolved in normal saline solution 10 c.cm., but there is no great advantage in this method, and it occasionally causes shock.

*Local Treatment* in the acute cases consists of soothing the inflamed skin and endeavouring to reduce the erythema. The scaliness is, as a rule, slight, and requires no special attention. For the reduction of the erythema it is better to use lotions than greasy applications, which are heating; lotions containing lead and ichthyol are of most service. A favourite application consists of the glycerine of the subacetate of lead in water (1 in 8), and the ichthyol may be used in a 3–6 per cent. aqueous solution. The astringent action of the lotion may be increased by the subsequent application of a bland dusting powder. When the acute erythema subsides, and the patches become dry and scaly, a bland zinc cream may be substituted.

In acute cases the prognosis should always be guarded, for although the skin affection may sometimes disappear, either spontaneously or under suitable applications, the underlying toxæmia may sometimes lead to a fatal issue. As a rule, towards the end, in fatal cases, the eruption tends to subside.

### *Chronic Circumscribed Cases.*

*General Treatment.*—In the chronic cases, though the local treatment is of paramount importance, general treatment must on no account be neglected. Any disturbance of the alimentary tract, disease of the kidneys, intestines, or other organs must be carefully sought for and dealt with. The diet should be regulated, and anything which tends to cause flushing, such as alcohol, coffee, rich foods, &c., omitted. A careful examination should be made for any septic focus, such as diseased tonsils, septic gums, or streptococci in the fæces. Benefit has been claimed from removal of the septic focus, and from injections of autogenous vaccines, but in my experience vaccine treatment is apt to be disappointing. Improvement in the lesions may follow a reaction due to an autogenous vaccine, but the reaction is not necessarily specific. Improvement has been claimed to follow injections of sterile milk albumin, and the intravenous injection of a typhoid vaccine.

All sources of local irritation, such as brilliant sunshine, over-heated rooms, cold winds, and violent exercise, should be scrupulously guarded against. Quinine and salicin, especially in cases associated with rheumatism, are also of service in the treatment of the circumscribed lesion, and their value may be enhanced by confinement to bed.

*Local Treatment.*—Since this affection is as easily aggravated as cured by local remedies, it is always advisable to begin treatment in a cautious and tentative fashion, and gradually to increase the strength of the applications according to the toleration of the patient. The two main indications are the removal of the scales and the reduction of the hyperæmia.

The scales should be removed daily, before the application of any lotion or ointment, by washing the lesions with soap, spirit lotion, on a piece of flannel, or, where the scales are particularly adherent, by rubbing in 3 per cent. salicylic acid ointment.

For the reduction of the hyperæmia the time-honoured calamine lotion is a most useful remedy, and its value can be increased by the addition of 2 per cent. of the liquor plumbi subacetatis. Its application not only reduces the erythema, but conceals and protects the patches by leaving a deposit of powder. It should be either dabbed on with cotton-wool or applied continuously for half an hour at a time on lint. Ichthyol, a valuable astringent, can be employed either as a 5 per cent. ointment in vaseline or as a lotion. In resistant patches it may be continuously applied in plaster form. Formalin ointment (5 per cent.) and adrenalin lotion (1 in 1000) are also serviceable, but are liable to irritate a delicate skin. Where the patches are of a fixed, resistant type, and covered by a thick adherent scale, stronger applications are necessary, such as painting the patches with contractile collodion containing 1 per cent. of salicylic acid or the application of a lotion of 10 per cent. resorcin dissolved in spirit, or 6 per cent. oxidised pyrogallic acid paste.

Caustic remedies, such as silver nitrate, carbolic acid, and corrosive sublimate, were at one time largely employed, but are better avoided because their action is so destructive as sometimes to be followed by unsightly scarring. Where the lesions are small good results have been obtained by multiple scarification, but great care and considerable practice are required to avoid scarring. Where patches are on the scalp all that can be hoped is to prevent, if possible, the spread of the diseased process, for, once a patch has occurred, the atrophy associated with it leads to permanent local baldness.

In addition to the chemical methods of treatment, certain physical and electrical methods may be employed, such as ionisation, refrigeration, ultraviolet light, X rays, and radium. Of these ionisation, with a solid zinc electrode, and refrigeration, with carbon dioxide snow, give the best results.

The *ionisation method* is simple. A small piece of lint is saturated in a 2 per cent. solution of sulphate of zinc and applied to the lesion; on this is placed a flat zinc block electrode, of suitable size, which is attached to the positive pole of a galvanic battery; the negative pole consists either of a metal cylinder, covered with chamois leather and dipped in saline solution, which is grasped by the patient, or a large pad held in contact with some part of the skin. A current of 2–5 milliampères is passed for about 15 minutes, the strength of the current being determined by the toleration of the patient. As a result of the exposure the tissue becomes blanched like parchment and remains so for a time varying with the strength of the current. If the exposure be not excessive there will be no subsequent reaction, but if it be too prolonged, or the current too strong, superficial ulceration may result. A single treatment may suffice to cause the involution of the patch, but, as a rule, several are necessary and should be given at intervals of not less than a week.

*Freezing* with carbon dioxide sometimes gives excellent results, especially in resistant lesions, but it must on no account be used where the disease is active and spreading. The applications should not be longer than 10 to 15 seconds, with medium pressure, since, especially in situations where the skin is thin and stretched over bones or cartilage, over-exposure may lead to superficial ulceration and scarring.

*Ultra-violet light* is of comparatively little value. I have found that the patches react more vigorously to the rays than the normal skin, and that, when the reaction subsides, slight improvement may follow, especially in lesions of the fixed chronic type, but I have never known the disease to disappear under this treatment alone, and I have known it to cause spreading.

X rays and radium have also been recommended, but the results from them are disappointing.

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New Sussex Hospital for Women.—At the annual meeting on March 15th of the New Sussex Hospital for Women and Children at Brighton—an institution entirely officered by women doctors—reference was made to the progress of cancer research carried on there in conjunction with work at three London hospitals. Miss Louisa Martindale, the senior surgeon, said that this was the first coördinated work of its kind in the country. Hitherto, cancer research had been done in individual hospitals, but now the same dosage of radium was being used by different surgeons at hospitals dealing with different classes of patients. To continue this promising work was one urgent reason for extending the hospital's accommodation at Brighton. Lady Cooper Rawson said that if an extension was built and a new ward with 30 beds was opened at once, there would still be a waiting-list. The number of in-patients treated during the year was 486, compared with 430 in 1924. Out-patients numbered 2553 as against 2471. The finances showed a sound position, the sum of £683 received during the year as payment for treatment given to members of the Sussex Provident Scheme being one of the main sources of support. The institution continued to pay its way.

# Special Articles.

## THE TUBERCULOUS COW.

CAN tubercle-free herds be kept at a profit and is it worth a farmer's while to keep them? How can the public be educated to demand clean milk? Why has the medical profession done so little to foster the demand? These are some of the questions raised at a conference of the "Grade A (Tuberculin-tested)" Milk Producers' Association held on March 23rd and 24th at the University of Reading.

Most of the problems discussed were primarily agricultural; but the endeavour behind them has been inspired mainly by doctors, and its success or failure is important to the public health. Therefore the opinions and difficulties of those who are trying to get rid of tuberculosis from their cattle deserve the sympathetic consideration of the medical profession.

On the first morning the conference met under the presidency of Dr. R. KING BROWN, medical officer of health for Bermondsey, who commended the effort to supply clean milk as part of the larger campaign for uncontaminated food.

### *Growing Enlightenment of Scotland.*

Mr. J. KIRKWOOD gave an account of what was being done in Scotland. There, he said, as in England, there were five kinds of milk—namely, ordinary commercial, pasteurised, Grade A, Grade A (Tuberculin-tested), and Grade A (Certified). At the end of February, 1926, there were in Scotland 19 producers of Certified milk, 27 of Grade A (T.T.), and 15 of Grade A, and the movement was making rapid progress. Eight of the 11 county institutions in Lanarkshire were supplied with milk of the first two qualities, and in Aberdeen it was provided in all the fever hospitals and welfare centres. These were only two examples out of many, and it was noteworthy that the Milk Designation Order had made the ordinary farmer, and not the pedigree breeder only, take an interest in eradicating tuberculosis. The present names of the grades, however, were most unsatisfactory, as the public could not understand what they meant. Why should not the four safe kinds of milk be called A, B, C, and D? As it was, people naturally supposed Grade A to be the best obtainable, and unscrupulous dealers traded on this. Farmers who had rid their herds of tubercle at considerable trouble and expense were entitled to have this fact intelligibly stated to their customers. They also needed the helpful coöperation of medical officers of health rather than criticism from them.

Mr. J. M. CAIE (Scottish Board of Agriculture) said that ordinary milk in one of the Scottish cities cost 6*d.* per quart; Grade A (T.T.) fluctuated in price, but was usually about 2*d.* dearer; whilst Certified was sold at a flat rate of 1*s.* all the year round. That epitomised the problem The demand for Certified milk was going up faster than the demand for the other grades, because the buyer who once abandoned ordinary milk thereafter insisted on the very best. In Scotland in June, 1925, there were 450,000 cows, and perhaps 1500 of them were giving graded milk. Doctors could do a great deal to stimulate demand, and demand would lower price.

Mr. D. SCOTT (Scottish Board of Health) said that until four years ago people considered one milk as good as another, whether it contained pus, tubercle bacilli, fat, or none of these things. At least the public nowadays knew that there was a difference, and to that extent grading had been a success. The names might not be ideal, but what were the alternatives?

Other speakers regretted that consumers were still so backward that they demanded warm milk in the morning and did not appreciate it properly cooled; and an animated discussion ended with a reply from Mr. KIRKWOOD, who found it hard to believe in the schedule of prices given by Mr. Caie and said that the demand for the higher grades of milk was greater amongst the poor than the rich.

### *The Education of the Farmer.*

A paper by Mr. J. P. BLACKSHAW (Ministry of Agriculture) described the rapid progress of the last half century. British dairying, he said, was certainly not behind that of any other country, and the cause of cleanliness had been helped immensely by practical demonstrations at agricultural shows and farms, by classes for milkers, and by clean milk competitions. Last year there had been competitions in 33 counties in which over 15,000 cows were entered; competitors who were lukewarm at first had often ended by becoming producers of graded milk. All that they needed was a market, and it was the medical officer of health and the sanitary inspector who could do most to find one. Many of them did a great deal—as in Bermondsey, Newcastle, and Leeds—but there were many who did not. In Newcastle a gallon of tuberculin-tested milk was supplied daily for each 350 of the population.

Dr. STENHOUSE WILLIAMS said that in Reading one-sixth of the town's supply was of this kind.—Mr. J. A. HANLEY said that the M.O.H. for Leeds had made some sort of a competitive test obligatory on those who supplied institutions in the city.—Other speakers pointed out how easy it was for the producer to lose his keenness or to neglect personal supervision. He was apt to fight shy of the many rules and regulations, and if his standard did fall he should be gently treated and given every chance to get advice from the agricultural educational authorities of his county. It was a great mistake to take licences away before assistance of this kind had been offered.

The conference passed a resolution urging that this should never be done.

### *The Cost of Eliminating Tuberculosis.*

Mr. V. LIVERSAGE dealt with the expenses incurred in starting a tubercle-free herd and their effect on the price of milk. Proper concrete flooring for the premises and a good water-supply were often heavy items, and he estimated the average loss on each cow that reacted to tuberculin at about £10. Extra labour was needed for the production of Grade A milk, which amounted to about 100 man-hours per cow per year. A number of estimates by farmers put the annual extra cost of keeping a tuberculin-tested herd at an average of £2 5*s.* 3*d.* per cow, and he thought that it usually worked out at between 2½*d.* and 3*d.* per gallon of milk.

Mr. Liversage's figures gave rise to a good deal of discussion. One speaker, drawing attention to the estimated profit of 13*s.* 4*d.* on each cow in the year, pointed out that in arriving even at this meagre figure nothing had been allowed for losses and the cost of labour had been taken at its lowest. The prospect was most melancholy. Another said that if the existing regulations were properly observed, nine farmers out of ten would have to embark on expensive alterations of their premises and the price of ordinary commercial milk would go up accordingly. Not all the expenditure, therefore, should be attributed to the cost of eliminating tuberculosis. All the same, it was obvious that a gallon of Grade A (T.T.) milk cost the producer at least 3*d.* more than a gallon of ordinary milk, and then there was the distributor to be considered as well. It was ridiculous to say that the farmer could do it more cheaply if only there were better management.

### *The Number of Reactors and the Advantages of Removing Them.*

On March 24th the chair was taken by Dr. A. A. MUSSEN (M.O.H. for Liverpool), and the proceedings opened with a paper by Mr. W. L. LITTLE on the value of the tuberculin test to the dairy farmer. Out of 400 animals tested for the first time he had

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[1] The last four of these are supplied only under licence. Grade A is milk which comes up to a reasonable standard of clean production; Grade A (T.T.) is clean milk from a tubercle-free herd; whilst Grade A (Certified) milk is similar to Grade A (T.T.), but is bottled at the farm to ensure even greater cleanliness.

found that nearly 38 per cent. were reactors. There was thus a good deal of loss to be faced in making a herd tubercle-free. On the other hand, there were definite advantages, for the cows would not be likely to suffer from sterility or mastitis; there would be no wasters; they would not eat so much as those affected by tuberculosis; and there was a growing demand for tuberculin-tested cows which enabled the farmer to sell them at £3 or £4 more per head. The meat inspector of Cork had recently said that 50 per cent. of animals slaughtered in that city were tuberculous, and it was an advantage to be sure that carcasses would not be rejected. Lastly, the tubercle-free cow had a greater expectation of life. No animal once reacting, said Mr. Little, should ever be given another chance. The tuberculin test rarely failed, and then only in animals not actively infectious at the time; and it was to be hoped that British cattle would eventually be freed from tuberculosis as were those of the Channel Islands.

The Secretary of the Association (Lieut.-Colonel C. MADDOCK, I.M.S.) read a paper by Mr. G. P. MALE in which he mentioned other advantages to the owner who got rid of reactors. There was no longer a fear that time and money would be lost owing to seizures of milk alleged to contain tubercle bacilli. No fresh animal, he thought, should be introduced into a herd of non-reactors until it had been tested, quarantined for six months, and tested again by the double method.

Dr. MYER COPLANS (interpreting for Prof. MAZÉ, of the Pasteur Institute) said that only 7 per cent. of Normandy cattle were found to react. They were more in the open air than English animals, but perhaps the Shorthorns of England were particularly susceptible?—Mr. LITTLE replied that tuberculosis was a disease of the sheds, and that was why the disease was so prevalent in England. In Canada only some 12 per cent. reacted.— Mr. CUMBER pointed out that this low figure perhaps applied only to those under 3 years old. Of young animals in this country probably not 5 per cent. would react, and it was quite erroneous to suggest that the Canadian cattle were more healthy than the English. —Dr. RALPH PICKEN (M.O.H. for Cardiff) said that he would put the number of tuberculous carcasses in Cardiff slaughterhouses at not more than 5 per cent. It depended on age and sex; the percentage amongst milch cows would be about 10–15 per cent.—A speaker from Devonshire remarked that not more than 2 per cent. of the cows in his county reacted.

Prof. G. H. WOOLDRIDGE gave an address of great interest, in the course of which he said that in introducing outsiders into the herd a medium course was desirable. No animal should be admitted straight away unless it came from another tubercle-free herd; one or two months' isolation was needed in case there was infection as yet undeveloped. Most of the troubles of owners were caused by cows being given the benefit of the doubt when there was one, and although there were border-line cases, no risks should ever be taken. No one breed of cattle showed special susceptibility to tubercle, but those which came from herds long immune were the first to succumb to infection. This was true also of human beings.

Many other speakers continued the discussion. Captain ROSS GRANT said that experience in Queensland showed that environment had very little to do with the infection. Arbitrary statements about percentage of reactors conveyed little; in Queensland it was found that less than 4 per cent. of bullocks reacted, but the figure for breeding cows (kept until the age of 8 or 9) was 30 or 40 per cent. Yet none of them had ever been near a shed, and they had been out in the sunshine all their lives. Housing had far less effect than was generally assumed. The real difficulty in this country was the disposal of the reactors. Obviously they could not be destroyed, and the consequence was that they were simply transferred to other herds. There was only one solution of the problem—to have two kinds of milk—namely, tubercle-free milk and *boiled* milk.

### *A Standard for Tuberculin.*

At the suggestion of Prof. R. S. SETON a resolution was passed urging that a standard of potency and preparation for veterinary tuberculin for diagnostic purposes be laid down and that its use be restricted to medical and veterinary practitioners. The conference considered the present state of affairs exceedingly unsatisfactory.

### *The Growing Consumption of Graded Milk.*

Mr. T. A. HOLE (Ministry of Health) said that the grading of milk was started by the Food Ministry in 1918, but had made little progress until 1922. In 1923 more exact standards were introduced and by the end of that year there were 144 licensed producers and 800 licensed distributors. At the end of 1924 there were 224 producers, and the number was steadily growing as the market grew better. There were now 200 tuberculin-tested herds and there were licensees in all but nine English counties, by far the largest number being in Berkshire, where the National Institute for Research in Dairying had been established since 1912. Altogether some 3,700,000 gallons of Certified and Grade A (T.T.) milk were now being produced annually, and the average consumer was now beginning to realise that the keeping of milk depended on its quality.

Dr. KING BROWN described the growth of the clean milk movement in Bermondsey. Practically all the milkmen there now sold graded milk at 1*d.* a pint more than the ordinary, and the borough was providing tuberculin-tested milk in welfare centres, and as extra nourishment for the tuberculous. At first there had been some talk of municipal distribution, which had had the effect of spurring on the milkmen to very efficient service. More than 1400 families in Bermondsey were now receiving Grade A (T.T.) milk and the standard was very high indeed. A count of 200,000 organisms (the legal standard) was unheard of; a count of 30,000 (the standard for Certified milk) was very rare indeed, and things had gone so far that a Bermondsey milkman whose milk went up to 10,000 would very likely be cautioned. A market had been gained simply by education and propaganda. Lectures were given in clubs, factories, associations, and schools, and a cinema film showing the production of clean milk (from the cow to the kitchen) was exhibited at street corners. There were also leaflets and picturesque handbills. An electric sign displaying some doggerel verses about milk had been most successful and the words had been eagerly learnt by all the children in the locality, who sang them with enthusiasm. The result was that the parents of every child in Bermondsey could not help knowing something, at any rate, about milk.

Dr. PICKEN said that no Grade A (T.T.) milk was on sale in Cardiff, and it was useless to encourage its use until there was an available source. Some 330 gallons of Grade A milk (about 3 per cent. of the whole) were coming into the city daily, but unfortunately about 100 had to be sold as ordinary milk. He had found that some 60 per cent. of commercial milk in Wales came up to the Grade A standard, though the figure was lower in summer. Cleanliness had steadily increased till last year, but since then there had not been improvement. One of the difficulties was that the public expected expensive milk to contain more fat, and they were disappointed when it did not. Graded milk producers must keep well below the legal standards of bacterial content, for the consumer was very critical; and they ought to be especially careful not to use cattle food which would give an objectionable flavour to the milk. Unfortunately the price of common milk was rising and it would be increasingly difficult to get people to pay more for a specialty.

### *Efficient Cooling.*

Mr. W. A. HOY gave an account of his observations on the bacterial content of milk as it reached the distributor. What was needed, he said, was more efficient cooling at the farm, with subsequent cold storage at a local depôt before despatch to the retailer.

Mr. W. Davies advocated the use of brine coolers on the farms. It was not sufficient that milk should be clean; it must also be cool. Once the public understood about graded milk, he said, there would be no difficulty in finding a market, and what was really needed to-day was an intensive campaign amongst members of the medical profession.

An official dinner was held in the hall of the University on March 23rd, at which Prof. Mazé replied to the toast of "The Visitors," proposed by Mr. S. R. Whitley. Dr. Stenhouse Williams, of the National Institute for Research in Dairying, represented the University of Reading, to which a charter has just been granted, and replied on its behalf to a toast by Mr. A. T. Loram. On the afternoons of March 23rd and 24th visits were paid to a number of farms in the neighbourhood of Reading and to the National Institute for Research in Dairying.

## IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *Powers and Duties of Coroners.*

A SELECT Committee of the Senate of the Irish Free State is at present considering a Coroners Bill, and recently heard evidence from Mr. J. J. Horgan, coroner of Cork, who spoke on behalf of the Coroners Association. The salaries of coroners, he said, were totally inadequate to the office—the more so, as they had to pay all their travelling expenses and also had to pay their deputies. A coroner, he thought, should be able to dispense with a jury, especially where an inquest was held in the house of a poor family, on whom the tramping in of a dozen men had a depressing effect. He suggested, and the Committee accepted the suggestion, that it should be a statutory obligation on the Civic Guard to report to the coroner in cases where death took place without medical attendance. The coroner should have the right to order the exhumation of a body without seeking the consent of the Minister for Justice. The question of the coroner having the right to call in a pathologist and pay him a proper fee was one of great importance. At present, moreover, he was empowered to allow no more than 5*s.* for the exhumation and reinterment of a body. He could not give a witness expenses beyond 2*s.*, and even then could only give such expenses to a poor person.

### *Wards for Paying Patients.*

At the annual meeting of the Corporation of the Royal Victoria Hospital, Belfast, several speakers urged that a paying department should be provided for middle-class patients and the idea was received very sympathetically by the large audience. For a long time the medical profession in Belfast has been greatly interested in the project; its importance and even its urgency are generally recognised. Opinion seems to favour the provision of such a department in connexion with existing general hospitals, rather than the erection of a special and independent hospital, but the question is still open to discussion. The Royal Victoria Hospital is in the fortunate position of possessing about 19 acres of ground, situated in a favourable position, and offering ample opportunity for the erection of a block of paying wards. Seven acres of this has been given to the hospital during the past year by the City Corporation. The hospital has been going ahead in many directions and the extensions and additions which have been in progress for nearly three years are now practically complete. They comprise two new units containing 80 beds, three new operating theatres, two new lecture rooms in the extern department, increased accommodation for the ophthalmic, venereal, and dental departments, a new mortuary, and a new nurses' home. The approximate cost of these additions and improvements is estimated at £120,000. Most of the new additions are already in commission and the formal inauguration will take place in a few weeks.

## SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

### *The Training of Natives as Doctors to their Own People.*

THE question of a medical training school for natives is occupying the minds both of officials of the Union Government and of those more directly concerned with native education. Foremost amongst the latter are the directors of the South African Native College, near Lovedale, Cape Colony. So far there has been no provision for training a native man or woman in the practice of medicine, for, although we have now two universities which give a complete curriculum and confer a South African degree, neither of them will admit a native to its classes. The Government is not unsympathetic towards the demand of the native for medical training, and the matter was referred to the Hospitals Committee whose report was published last year. Its findings were as follows:—

> "Your Committee is convinced that there is scope, and a distinct need in the native territories, for native doctors, working as far as possible under European supervision. The standard should be the same as for European medical practitioners, and any licence to practise should be restricted to native areas. Your Committee therefore recommends that the question be further investigated by Government, particularly in regard to the cost of such a proposal."

These recommendations have now been acted upon, and a special committee of inquiry, to consist of seven members, has been appointed to go into the proposal for the establishment of a training college for the training of natives in medicine and public health. The committee has been carefully chosen, and represents the Cape Town University, the Native Affairs Department, and the Health Department of the Union. The various provinces have each their own representative. Meanwhile the South African Native College, Fort Hare, has started courses in physics, chemistry, botany, and zoology with the object of saving one year's study overseas for those of their students who are taking their medical training in Great Britain, where all the medical schools are open to them.

The need for native practitioners amongst their own people is abundantly evident. At the present time there is an average of one hospital bed to every 1500 of the population. The Europeans are provided for in the ratio of one bed to every 400 persons, about half that of England, and less than one-third of the ratio obtaining in the United States. Government provides for the treatment of natives as part of their civil service, and it is intended that native practitioners should work under them as the Indian hospital assistant works under the civil surgeon in India. Throughout the Union to-day the district surgeon has an area of 100 miles and more to cover in the native territories. If he could be provided with two or three hospital assistants in charge of small branch hospitals the lot of the sick native would be greatly alleviated, and the spread of the knowledge of sanitation and personal hygiene would also become possible from these centres.

### *Hospital Deficiencies within the Union.*

The reports of the Hospitals Inquiry Commission, published last year, is a strong indictment of the whole hospital system of the Union. The Provincial Councils of the four Provinces are responsible for the upkeep and administration of all hospitals and dispensaries within their borders. After full inquiry the Commissioners were unanimous in condemning the existing system, and strongly advocated that all health and hospital administration should come under the sole control of the Union Government. They based their recommendation on the following facts. The out-of-date equipment and inadequate accommodation of nearly all the hospitals; lack of suitable provision for maternity cases, sick children, and cases of venereal disease; the neglect of early cases of tuberculosis and lack of accommodation for advanced cases; and the failure to provide adequately for the chronic sick. In this connexion the report says:—

> "There are only three chronic sick hospitals in the whole of the Union—in none of these has provision been made for chronic sick children—a dire necessity all over the Union."

Finally the report points out that there are, in the whole Union, no adequate dental services for either children or adults; no neurological department at any hospital; no institution for the treatment of crippled children; no provision for medical treatment of such children as the medical inspectors of schools may recommend for treatment. A motion is now before the Union Parliament that the Government should give effect to the report of the Hospitals Inquiry Committee as soon as possible, the main recommendation being that the hospitals should be taken out of the control of the Provincial Councils and handed over to the Union Department of Health.

### *Defective Transvaal Children.*

A report on the medical examination of schoolchildren in the Transvaal shows the existence of a large proportion of physical defects, most of which are attributed to parental neglect, direct or indirect. Of the 15,000 children examined by authority of the medical inspector of schools, 7500 were found to be suffering from minor defects. Malarial children were being robbed of Government quinine supplies by their parents; there were about 75 per cent. of dental defects, and 800 children needed attention for ear, nose, or throat. The children were all treated free under the clinic system established at Johannesburg for children of indigent parents.

The South African Medical and Pharmacy Bill, long held over, is to be re-introduced into the Union Parliament at the end of the present session.

Dr. S. G. Campbell, who died on March 12th at the age of 65, was one of Durban's leading citizens. He was at one time president of the local medical council, and was responsible for the foundation of the Technical College.

Dr. Wallace Haworth, entomologist to the Administration of Southern Rhodesia and late acting director of the laboratory at Dar-es-Salaam, East Africa, died on March 14th as the result of injuries received in a motor accident.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

### *A Filter-passing Virus in Tuberculosis.*

IN pursuance of their work on the virus of tuberculosis Dr. Fernand Arloing and Dr. A. Dufourt, of Lyons, have published some observations on a child born prematurely at the seventh month whose mother suffered from advanced pulmonary tuberculosis. This child was isolated at once and was given every care, but died at the end of a month after losing a fifth of its weight. On examination no obvious tuberculous lesion was found, though there were a few tubercle bacilli in the mesenteric glands. A filtered extract of the principal viscera had no effect when injected into a guinea-pig, but subcutaneous injection of a filtered extract of the mesenteric glands produced tuberculisation of the animal leading to emaciation and death. There is a remarkable similarity between this observation on a human being and previous experimental results; they obviously have an important bearing on the inheritance of tuberculosis. According to Dr. Arloing and Dr. Dufourt there is in the new-born a special pathological condition, not yet understood, due to a filterable virus of tuberculosis being passed through the placenta. Some of the obscure wasting conditions, hypotrophies and atrophies of childhood ought probably to be placed in this group.

### *Medical Practice by a Chiropodist.*

A well-known Parisian chiropodist has just been had up for illegal medical practice. The tribunal learned that he had been using a scalpel and caustics in the treatment of warts, and adjudged that the use of these agents was the prerogative of medical men. The complainants, a local association of doctors, were accordingly awarded 300 francs damages, and a fine of 100 francs was inflicted.

### *Diabetes and Insulin.*

Insulin has entirely altered the prognosis of diabetes, and its late results are as remarkable as its immediate effects. Prof. Marcel Labbé estimates that half the subjects that he has treated would have died in coma but for insulin. Unfortunately, tuberculosis is common among diabetics in France and insulin has no effect in hindering its development. Furthermore, those who are treated with insulin, although greatly helped, are still very delicate and run the risk of complications; they have to be kept under careful observation, and none of them can be considered really cured. Most patients, Prof. Labbé considers, show a progressive aggravation of the diabetic process, which calls for larger and larger doses of insulin; but the evolution of the disease is made considerably slower.

### *New Academicians.*

The two vacant seats at the Académie de Médecine have been filled by the election of Prof. Georges Dumas and Prof. A. Couvelaire. Prof. Dumas, who was born in 1866, occupies the chair of experimental psychology at the Sorbonne and the chair of pathological psychology at the Institute of Psychology. During the war he rendered good service as physician to the Neuropsychiatric Clinic and since then he has been on several important missions to America. His books on the intellectual states, grief, joy, and laughter, and on the confusional amnesias have been much appreciated. Prof. Couvelaire was born in 1873 and is professor in the Obstetric Clinic of the Faculté de Médecine at Paris, in which position he succeeded his father-in-law, Prof. Pinard. The Académie des Sciences has elected Dr. Jean Charcot, son of the famous neurologist of the Salpêtrière. Dr. Charcot studied medicine but afterwards became an explorer, and has published valuable scientific observations on the South Polar regions.

### *Production and Sale of Pacifiers Prohibited.*

Prof. Pinard, who is well known as a champion of puériculture, has succeeded in persuading the Chamber of Deputies to prohibit the manufacture and sale of the *sucette* (dummy or pacifier) on the grounds that this device deforms the mouth, introduces infection, and may easily prove fatal when aspirated into the larynx. Its baneful effects have been discussed more than once during the past year at the Faculté de Médecine, but hitherto the conditions of the labour market have prevented any active steps, for the manufacture of these dangerous utensils serves to support a large community just outside Paris. The Bill was approved mainly because of a stirring appeal for reduction of the French child and infant mortality. An interval of three months has been allowed for the readjustment of the industrial concerns affected.

The French Society for the Encouragement of National Industry has just awarded its highest honour to the League of Red Cross Societies, in recognition of the importance of the League in the peaceful coördination of international interests.

About 100 Danish doctors have been visiting France and are now cruising in the Mediterranean. During their stay at Paris they opened a Danish nurses' home which is the first headquarters established in France for the Danish medical and nursing professions.

A series of lectures and demonstrations, called Journées Médicales de Paris, is to be held at the Grand Palais from July 15th to 19th, inclusive. Among those who will give lectures and demonstrations are Calmette, Putti (of Bologna), Bensaude, Sicard, Balthazard, Madame Curie, and others. The membership fee will be 50 francs, and particulars may be had from the Secrétaire-Général, Journées Médicales de Paris, 18 rue de Verneuil.

The French National Congress on Hygiene will be held at the Pasteur Institute, Paris, during the second fortnight of October. The subjects announced provisionally for discussion include the French immigration problem, the preservation of food by cold, and the part assignable to official hygienists in the anti-tuberculosis campaign.

# Public Health Services.

## REPORTS OF MEDICAL OFFICERS OF HEALTH.

### THE FIRST REPORT FOR 1925.

Dr. A. T. Nankivell's first report for Plymouth is also the first report which we have received for the "survey" year of 1925. He is able to record valuable work, since he took up his appointment, in the coördination of the public health service and in the institution of close coöperation between the various departments. This is shown graphically in a table. Dr. Nankivell indicates many of the needs of Plymouth, and it will be interesting to see how many of these needs his council has been able to provide before the advent of the next "survey" year of 1930.

The following are some of the principal statistics for the year 1925 Population, 211,078; birth-rate, 18·1; death-rate from all causes, 12·2; death-rates per 1000 of the population, from tuberculosis 1·06, from cancer 1·80, from respiratory diseases, with influenza, 2·8; and death-rates per 1000 births, neonatal mortality 30, infant mortality 63, maternal mortality from childbirth 4·7. Dr. Nankivell deals fully with the aim of the health service, the public health organisation, the history and natural, geological and social conditions of his area. Among the advantages of Plymouth he instances the large amount of bright sunshine (the record for 1925 was 1705·5 hours as compared with an average of 1660), and the fact that, owing to geological features and contours, the somewhat heavy rainfall (39·11 inches in 1925, or about 3 inches above the average) is speedily drained off. A chart shows that though the total infant mortality has been reduced from the neighbourhood of 100 to the neighbourhood of 60 during the last ten years, the neonatal mortality has remained almost stationary. In spite of natural advantages, pneumonia and bronchitis show a heavy death-rate, and Dr. Nankivell hopes before next autumn to be able to supply the doctors in the Three Towns with a vaccine which will give some protection from these complaints. Compared with other garrison and seaport towns, Dr. Nankivell thinks that Plymouth is relatively a sober borough. The ship used as a small-pox hospital has been sold to a ship-breaker, and negotiations are in progress for the use by the borough of the small-pox hospital of the Plymouth rural district.

Dr. Nankivell would like to see every medical member of his staff engaged in some research work, and during the year some work has been done with regard to the silica contents of dust from different towns and as to the use of the Dick serum in the treatment of scarlet fever. The two gathering-grounds of the water-supply are moorland and well protected from contamination. The water is very soft but has no action on lead. Bacterial analysis shows the presence of *Bacillus coli*, and Dr. Nankivell suggests that these are brought on the feet of seagulls from the sewage outfalls or from one of the tips. One would have thought the "droppings" of the seagulls a more likely explanation. About two-thirds of the practitioners of Plymouth who replied to a questionnaire as to the prevalence of goitre expressed the opinion that the condition was very prevalent. This is somewhat surprising in view of the generally held opinion that proximity to the sea and the iodine borne by the sea-spray act as protectives. Dr. Nankivell condemns the dumping of the refuse in the sea and the use of refuse tips in two localities. He would like to see all the refuse dealt with by a proper destructor or pulverising plant.

Many of the houses in the Three Towns, built more than 100 years ago, can only be dealt with adequately by reconstruction schemes, and three such schemes have been submitted to the Ministry of Health for their approval. The council of Plymouth have utilised the section for repairing houses in the default of, and at the cost of, the owners to the extent of £5515. Dr. Nankivell points out that there is no remedy in the case of thriftless and unintelligent persons who take no care of the houses in which they live. In Holland, he says, bad tenants are taken to a segregation camp and kept there under discipline until they are reformed—with admirable results. The shortage of houses has led to overcrowding and the herding of more than one family in houses only intended for one family. Altogether the Plymouth council have erected 1101 houses for the use of the working classes. During 1925 186 new municipal houses were made ready for tenants, and at the end of the year 192 were in course of construction. Apart from municipal houses 200 new houses were completed and 286 were under construction at the end of the year, in addition to 40 houses built by the Astor Trust. The present public abattoir is quite inadequate, and a report made at the end of the year states that "from the point of view of public health and decency this is not a suitable site for our abattoir and a real effort should be made to move this objectionable trade to the outskirts of the borough."

An extensive outbreak of food poisoning occurred at the workhouse in April. Three hundred persons out of a total population of 750 were affected, fortunately with no deaths. The chief cook was found to be a carrier of bacilli resembling *B. suipestifer*. The use of Dick-Dochez serum for severe cases of scarlet fever gave encouraging results at the hospital, and immunisation against diphtheria was successfully practised in the case of outbreaks at two institutions during the year. Dr. Nankivell is optimistic as to the possibility of protecting all infants from diphtheria, thus enabling the diphtheria wards to be closed. A scheme is under consideration for an orthopædic hospital at Swilly for the treatment of crippling from rickets, tuberculosis, and poliomyelitis. For the treatment of non-pulmonary tuberculosis Plymouth is at present entirely dependent upon outside institutions. A sanatorium is also needed for intermediate and advanced cases of tuberculosis in females. Antenatal clinics are only working on a small scale. Thus there were 3832 births and 812 mothers attended the antenatal clinics. Up to April, 1925, there was only one school dentist. Since that date there have been two, but Dr. Nankivell calculates that two school dentists are only able to do about one-third of the work which ought to be done The school medical service has assumed control of the orthopædic clinic and all arrangements for supplying remedial apparatus. The school medical officers visit the clinic weekly or oftener and the consulting orthopædic surgeon once a month. The two open-air schools have accommodation for about 150 each; but many improvements are overdue at both schools. Oysters are cultivated within the jurisdiction of the Plymouth Port Sanitary Authority. The Yealm beds at Steer Point are used for relaying purposes, but the shell-fish in the Tamar and Lynher are liable to sewage contamination from Saltash and are only allowed to be sold for re-stocking purposes.

The report concludes with a number of interesting tables and a copy of a leaflet on cancer, which has been widely circulated in Plymouth.

### Encephalitis Lethargica in Manchester.

A valuable monograph on sleepy sickness by Dr. W. St. Clair McClure accompanies Dr. R. Veitch Clark's recently issued report on the health of Manchester for the years 1923 and 1924. In 1919 10 cases were notified, and in the following years 31, 19, 9, 36, and 244. The 36 cases notified in 1923 were widely distributed over the city, and no connexion could be traced between them. Sixteen of them proved fatal. During December, 1923, four cases occurred in four districts. In January, 1924, there were 21 cases in 15 districts, and thereafter the whole city was involved. Persons of all ages were attacked, but the incidence was heaviest under the age of 20. The sex distribution was nearly equal, 129 patients being males and 115 females. The average case fatality was about 20 per cent.; the death-roll is not yet complete. No occupational influence could be traced, although unfavourable environment showed some effect. There was nothing suggestive in the way of illness among the 1207 family contacts, except perhaps two cases of hiccup. No association could be made out with influenza; an outbreak of this occurred after the encephalitis had subsided, and there were ten cases of influenza among the 1207 encephalitis contacts. Influenza did not invade the households attacked by encephalitis, and no correlation was shown between the two diseases during the past five years in Manchester. An epidemic of hiccup preceded the encephalitis epidemic of 1924. The attacks of hiccup lasted from three to ten days without other symptoms, except drowsiness in a few cases. With two exceptions the households attacked by encephalitis were not affected by hiccup. Further, hiccup was not a common symptom of the encephalitis patients, and was only noted in eight of the notified cases. There were no definite multiple cases in a household, but in seven cases another member of the family had previously suffered from suspicious symptoms. The following was the percentage frequency of certain symptoms:—

| | Per cent. | | Per cent. |
|---|---|---|---|
| Initial vomiting .. .. | 10 | Paralysis of one or more cranial nerves .. .. | 40 |
| Initial headache .. .. | 36 | Double vision .. .. | 44 |
| Pronounced lethargy .. | 70 | Nystagmus .. .. | 10 |
| Insomnia and delirium .. | 30 | Initial choreic twitchings | 31 |

The fundus oculi was examined in 58 patients; in one case there was engorgement of the papillary veins, in the remainder nothing abnormal. Diplopia was the outstanding feature at the onset in a considerable number, and in some cases diplopia and some drowsiness were the only symptoms. The actual notifications received were 282, in 38 of which the diagnosis was subsequently revised as follows: Influenza, 5; typhoid, 1; tuberculous meningitis, 5; cerebral abscess, 2; cerebro-spinal fever, 1; chorea, 2; tonsillitis, 2; broncho-pneumonia, 4; muscular rheumatism, 2; gastritis, 3; anæmia, 2; senility, 2; and others, 7. As a rule the diagnosis was unmistakable. In doubtful cases examination of the spinal fluid was of value in excluding meningitis. It is still too early to determine the final result of the 1924 cases, but of the 50 cases notified in 1920 and 1921 28 have died; 5 are totally incapacitated and becoming completely helpless; 4 are able to do housework only; and only 13 are able to follow their employment or attend school, recovery being complete in 7 of them.

### INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 27th, 1926.

*Notifications.*—The following cases of infectious disease were notified during the week:—Small-pox, 178 (last week 189); scarlet fever, 1586; diphtheria, 1005; enteric fever, 46; pneumonia, 1183; puerperal fever, 45; cerebro-spinal fever, 6; acute poliomyelitis, 1; encephalitis lethargica, 37; dysentery, 0; ophthalmia neonatorum, 119. There were no cases of cholera, plague, or typhus fever notified during the week.

*Deaths.*—In the aggregate of great towns, including London, there were 7 (2) deaths from enteric fever, 121 (49) from measles, 9 (3) from scarlet fever, 66 (4) from whooping-cough, 47 (16) from diphtheria, 38 (11) from diarrhœa and enteritis under 2 years of age, and 136 (27) from influenza. The figures in parentheses are those for London itself. The notified deaths from influenza number the same as last week. The number of deaths from measles is the highest recorded for the quarter.

Influenza in Glasgow.—67 deaths from influenza were reported in Glasgow during the week ended April 3rd, as against 24 and 7 in the preceding weeks; also 60 more deaths from respiratory diseases than in the preceding week. The public health authority is providing for the isolation of many of the severe cases of influenza.

# The Services.

## ARMY MEDICAL SERVICE.

*Assistant Director of Hygiene.*—Lt.-Col. and Bt. Col. P. H. Henderson, R.A.M.C., relinquishes his appt. at the War Office.

### ROYAL ARMY MEDICAL COLLEGE.

*Professor.*—Lt.-Col. and Bt. Col. P. H. Henderson, R.A.M.C., vice Bt. Lt.-Col. J. A. Anderson (vacated).

### ROYAL HOSPITAL, CHELSEA.

*Deputy Surgeon.*—Capt. G. S. McConkey, R.A.M.C., vice Lt. J. G. E. Vachell (vacated).

## ROYAL ARMY MEDICAL CORPS.

Lt.-Col. and Bt. Col. H. E. M. Douglas, from R.A.M.C., to be Col., vice Col. F. F. Carroll, to half pay.

The undermentioned Majs. to be Lt.-Cols.: H. H. J. Fawcett, vice Lt.-Col. P. H. Falkner, to retd. pay. J. D. Richmond, vice Lt.-Col. and Bt. Col. H. E. M. Douglas (promoted).

### ARMY RESERVE OF OFFICERS.

Maj. C. Cassidy ceases to belong to the Res. of Off. on account of ill-health.

### TERRITORIAL ARMY.

Capt. O. H. Mavor resigns his commn., and is granted the rank of Maj. Lt. R. M. Savege to be Capt. (Prov.).

## ROYAL AIR FORCE.

Flying Officer A. Dickson is granted a permanent commission in this rank.

## INDIAN MEDICAL SERVICE.

Temp. Lts. to be temp. Capts.: Ram Chand Gaulatia, Chuni Lal Katial, Ram Mansoor, Santosh Kumar Ganguli, Samuel Mufty, Amar Nath Chopra, Chuni Lal Bhola. V. A. Edge to be Lt.

Capt. Saravanamuthu Thambiah relinquishes his temp. commn.

Sussex Provident Scheme.—The growth of the scheme during 1925 was described at the annual meeting at Brighton on March 20th as extraordinary. The number of groups had increased during the year from 177 to 229, and the number of subscribers from 9955 to 12,428. At the end of 1924 the number of dependants coming under the scheme was 15,306, making the total 25,261, and at the end of 1925 dependants numbered 18,573, making the total 31,001. The total increase was thus 5740 in the year. Other figures given by Major P. A. S. Crawley, the chairman, equally testified to the success of the scheme. In-patients in 1925 cost £5272 and out-patients £1104, a total of £6376; 843 members obtained free special in-patient treatment for 14,058 days, and 2705 members obtained free special out-patient treatment for 12,966 attendances. The number of in-patients was 224 more than in 1924, and the number of out-patients 815 more. The money given to the hospitals was £6376 as against £5501 in 1924, and since the scheme was inaugurated in 1922 it had paid £16,164 to the hospitals. Major Crawley did not think the hospitals could afford not to support the scheme. Generally speaking, the hospitals were very keen, and wished to do everything in their power to support it, but unfortunately a good many omitted from their annual reports any appreciation of the work of the collectors and committee. Although the scheme was run on business lines, it was not a commercial undertaking, and there was no profit to anybody except the hospitals who got the money and the workpeople who got the treatment. The costs of administration were extremely low (£534), and the hospitals had received 81 per cent. of the total cost of their members. That might not have been as much as the executive at one time hoped, but it was as much as any hospital could expect. Subscription to the scheme was very low, and if they could pay over four-fifths of the cost the hospitals had nothing to complain of.

# Correspondence.

"Audi alteram partem."

## DIABETES, A RECOVERABLE DISEASE.

*To the Editor of* THE LANCET.

SIR,—My experience with four cases of diabetes mellitus in private practice may be of interest in connexion with the question raised in your issue of March 27th by Dr. G. H. Percival as to what recovery is possible in this disease. Though the cases are few in number, they have been under observation since 1924. Further, these patients have not been kept in bed at any time, but have continued their normal activities, so that the factor of muscular work cannot have influenced their sugar tolerance.

The principle I have worked on from the first has been the same as that practised by Dr. Percival—namely, physiological rest to the damaged pancreas—but I have got a step further and aimed at maintaining the patient for long periods in a state bordering on hypoglycæmia. After ascertaining by a 24-hours fast and a ladder diet that the patient is unable to utilise fully a diet of 1000 calories without glycosuria, I put the patient on an adequate diet of 1000 calories or so, and commence injections of insulin. I start with 5 units twice a day and increase the dose steadily, till slight hypoglycæmic symptoms appear. I then maintain the dose at that level. After a period of time varying with each patient, it is found that the hypoglycæmic symptoms become more pronounced. The dose is then diminished unit by unit, always waiting for constant and fairly pronounced hypoglycæmia to appear before lessening the dose. I continue this system until a minimal dose of 4 units, two hours before the principal meal, gives rise to symptoms. I then discard insulin and keep the patient on a regulated diet. Subsequently, if no sugar reappears in the urine, the diet is allowed to approximate to the normal. All patients are, of course, ordered to carry sugar whilst having insulin and instructed to eat some if muscular weakness appears as a symptom of hypoglycæmia. Slight symptoms are disregarded.

The following are abbreviated notes of the cases.

CASE 1.—Female, aged 41 In February, 1924, acute inflammation of maxillary antrum occurred and patient was unable to spare time for more than drainage of antrum through canine fossa under gas. Drainage maintained by vulcanite plug. Glycosuria discovered in May, 1924 Specific gravity of urine 1035. Hard work was a necessity and a diet of 1800 calories was required in consequence Insulin started in May and during June and July 40 units of insulin twice a day were required to produce hypoglycæmia. This was a great inconvenience and expense. In August chronic discharge from antrum ceased completely and plug was therefore removed and sinus allowed to close In September 20 units of insulin only were required to produce hypoglycæmia. Insulin stopped in July, 1925 Glycosuria has remained absent ever since. Blood-sugar in July, 1925 Fasting, 0·120 per cent.; one hour after 50 g. of glucose, 0·197 per cent., two hours after, 0·110 per cent

CASE 2.—Female, aged 30 Glycosuria discovered in July, 1924. Not controlled by diet. Blood-sugar: Fasting, 0·130 per cent; one hour after 50 g. glucose, 0·222 per cent; two hours after, 0·225 per cent. Ten units of insulin b.d. was found sufficient to cause hypoglycæmia. In March, 1925, insulin was stopped Blood-sugar: Fasting, 0·110 per cent, one hour after, 0·178 per cent.; two hours after, 0·158 per cent Has remained free from glycosuria ever since.

CASE 3.—Male, aged 30 Glycosuria not controlled by diet October, 1924, insulin 10 units b d required March, 1926, insulin stopped Has remained free from glycosuria up to present time

CASE 4.—Male, aged 71. Had had diabetes for over six years accompanied by neuritis. Both knee-jerks were absent In October 1924, hypoglycæmia induced by 17 units b.d. Knee-jerks returned by end of the month. In April, 1925, 13 units only were required once a day. Owing to an attack of agonising tic douloureux, treatment of diabetes became disorganised, and a new start had to be made in July with 20 units b d. Blood-sugar then was: Fasting, 0·173 per cent; one hour after 50 g. glucose, 0·210 per cent.; two hours after, 0·210 per cent. In January, 1926, his dose was 8 units once a day Blood-sugar was: Fasting, 0·163 per cent.; one hour after, 0·250 per cent.; two hours after, 0·175 per cent. I still hope that insulin may be discarded eventually in this case.

These four cases are entirely unselected. In none of them could the glycosuria be abolished by diet alone. In all of them great improvement in sugar tolerance resulted from the treatment, and in three of them insulin has been discarded and the glycosuria has not returned, though the patients enjoy a satisfying and varied diet. Incidentally, I think I have proved that it was justifiable to ignore the numerous warnings from eminent authorities that appeared in the medical press in 1924 on the subject of insulin dosage and the dangers of hypoglycæmia.

I am, Sir, yours faithfully,

Bridlington, March 31st, 1926. P. D. H. CHAPMAN.

## THEORY AND PRACTICE IN RELATION TO THE TREATMENT OF CANCER WITH LEAD.

*To the Editor of* THE LANCET.

SIR,—Since the meeting at the Medical Society of London on March 22nd hopes have been expressed by my friends that I would refute this or that statement after having had an opportunity of looking up the papers concerned, for, at the time, not having them with me, I had to be content with a general disavowal or an apology. I am, however, extremely loth to say anything more. Dr. Adami has already shown[1] how perverted certain criticism was, and how easily refuted. What he has said applies to nearly every adverse statement made in regard to our methods, and to the alleged "sloppiness" of our publications. Nor shall I be so ungracious as to ask for the correction of the one or two small verbal mistakes made in the excellent accounts of the meeting given by the medical reporters present. It was better that the accounts of such a meeting should be compiled by independent recorders rather than based on the usual abstracts sent in by the speakers.

There is, however, one matter to which, with Mr. Duncan Fitzwilliams's concurrence, I should like to refer. It will be remembered that Mr. Fitzwilliams made great play with a vivid description of a letter he said he had received from me—a letter which he thought illustrated bad faith on my part. In my reply, I ventured, from memory, to deny ever having dictated such a letter, and I suggested what I had probably written. Mr. Fitzwilliams, it will be recalled, then rose in his place and contradicted me. Thirty-six hours later I received the following letter from him:

'I am so sorry and I apologise most humbly for having contradicted you in what you recollected of having written to me

"Last night I asked my secretary to look up your letter but left the house in a hurry and did not take it with me—it was lying on my desk when I came home and it is exactly as you said, you have put my name down for notification for sometime perhaps in April. I visualised your letter as something quite different and having got it in my head I have not the vaguest idea with what I have mixed it up—I am indeed sorry.

"Let me add my congratulations on the success of your meeting last night I know perfectly well from what I had heard that you had met a not too friendly audience, and that you carried them completely with you must be a very great satisfaction to you.

"I shall look forward with great pleasure to seeing you in April."

This is the letter of a gentleman. Nevertheless, such mistakes should be avoided. Confident assertions and reassertions may produce an impression on an audience which is not always removed by a declaration of the truth at a later date. I feel sure that when Mr. Fitzwilliams comes to see us in a few weeks' time, so honourable a critic will realise and confess that we have neither magnified the dangers and difficulties, nor over-estimated the results we have obtained. Be this as it may, he will receive a cordial welcome, as have all those who during the last few years have visited us.—I am, Sir, yours faithfully,

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[1] Brit. Med. Jour., 1926, i., 501.

Liverpool, March 28th, 1926. W. BLAIR BELL.

## EMETINE IN THE TREATMENT OF HEPATIC ABSCESS.

*To the Editor of* THE LANCET.

SIR,—Having operated on 167 cases of hepatic abscess and seen many others, I should like to comment on Dr. Hodson's letter with Dr. Manson-Bahr's reply thereto which appeared in your issue of March 27th. Dr. Hodson divides his letter into sections:—

1. *Pathology*—and therein states that "People obsessed with the pyogenic abscess idea find it difficult to believe that the absorption of the contents of 'hepatic abscesses,' large and small, is possible." In my experience it is possible, but rarely occurs.

2. *Diagnosis.*—I do not think it is generally accepted that aspiration is necessary for the diagnosis of a liver abscess. Dr. Hodson goes on to quote a case in which death occurred from rupture of the abscess two hours after treatment was begun. Presumably aspiration was not employed; if this trifling operation had been performed would not the rupture with fatal results been prevented? I have a vivid recollection of a case which came into hospital at the end of a long and hot morning's operating which I postponed until the next day; unfortunately the abscess ruptured in the night with fatal results. I still feel that I was guilty in not at least giving the patient a chance by aspirating at once.

3. *Treatment.*—There I am absolutely opposed to Dr. Hodson's views; in my previous papers I think that I have proved that aspiration plus emetine does cure in "the quickest, the most certain, and the most humane way possible," as opposed to emetine alone.

Time after time I have had a patient on the table in pain and suffering the utmost discomfort, and after an injection of cocaine performed a painless aspiration and watched the patient's drawn expression gradually disappear as the pus was withdrawn. It is astonishing, too, what an amount of pus may be found with few physical signs. My experience is against the statement that 25 per cent. of the abscesses are multiple.

I agree that emetine, gr. i., on 12 successive days is not the best way of administering the drug, but my views in detail on the subject can be found in THE LANCET of Nov. 15th, 1924, p. 1008. My experience is also against the statement that the larger the abscess the easier is it to cure with emetine alone; in this respect I entirely concur with Dr. Manson-Bahr's reply—in fact, with all of it.

I am, Sir, yours faithfully,
E. OWEN THURSTON, F.R.C.S.,
Lieut.-Col., I.M.S.

Budleigh Salterton, March 28th, 1926.

## THE GENERAL MEDICAL COUNCIL AND SPECIALISTS.

*To the Editor of* THE LANCET.

SIR,—The suggestion contained in Mr. Joseph Griffith's valuable letter appearing in your issue of March 20th that the General Medical Council should insist on a standard of training and attainment for specialists and should keep a register of such specialists, is one which—as regards the registration of specialists—I advanced in your columns two years ago.[1] I then pointed out that the accessibility of such a register to the general public was a matter of prime importance, the point on which I laid special emphasis being the difficulty under present conditions that the public experience when they desire to consult a specialist, as they have no data on which to form an opinion except their recognition of names that have appeared in the lay press as having been in attendance on some distinguished patient. I drew attention to the fact that, whereas as regards the majority of diseases many of the public may perhaps be content to accept the advice of their family doctor or of friends in their selection of a specialist, that this is not true of sufferers from venereal disease, who are loath to seek such advice, with the result that they are driven either to attend a public clinic or to seek the advice of a chemist in a district where they are unknown. Owing to this difficulty in obtaining the names of reliable specialists the patient often postpones his visit to a doctor until much valuable time has been lost. An authoritative register of adequately tested specialists would, therefore, be of special value to sufferers from venereal disease and appears to be urgently required.

I am, Sir, yours faithfully,
H. WANSEY BAYLY.

Harley-street, W., March 26th, 1926.

## FACULTY OF SPEECH.

*To the Editor of* THE LANCET.

SIR,—With reference to the annotation in your issue of Feb. 6th, p. 299, on a paper of mine dealing with the Intuitive Capacity of Children to Understand Spoken Language, I am of the opinion that the word "instinct" as applied to the faculty of speech is a misnomer, an instinct being an elementary impulse incapable of further analysis, whereas the faculty of speech is a complex mental process capable in part of analysis and consisting of at least five factors:—

1. The capacity to hear spoken sounds.
2. The capacity to recognise the component words of phrases and sentences.
3. The ultimate capacity to comprehend the meanings of spoken sounds.
4. The capacity to store in the memory both the sounds and meanings of words.
5. The capacity not only to reproduce words—i.e., to articulate—correctly, but to use them in their correct senses.

The question how speech is acquired by infants and children depends therefore largely upon the solution of the third of the factors mentioned above—i.e., how the meanings of words are comprehended by them.

The writer of your annotation states that "meaning is indicated or suggested to the child *in some manner other than speech.*" With regard to verbs of "action" and to the names of objects it is easily understood how meaning is indicated or suggested, but concerning the bulk of the matériel of a language—viz., conjunctions, prepositions, moods, tenses, &c.—which are purely mental concepts, meaning cannot be indicated either by sight or by "action." The meanings of these must therefore be suggested either from without or from within. If from without the suggestion must be in the nature of "thought-transference" or telepathy. That this may in part be the way in which very young infants comprehend the meanings of words I am not prepared to deny; but I am of the opinion that it is not sufficient wholly to explain the phenomenon of the comprehension of spoken sounds. I have therefore put forward the hypothesis in my article that such suggestion comes from *within*, and that part of the "speech centre" of children is endowed with the capacity of comprehending the intended meanings of spoken sounds.

Some years ago a series of communications appeared in your columns[1] regarding "Calculating Boys." The analogy between the calculating faculty as found in these boys and the faculty for comprehending the meanings of spoken sounds, as found in infants and children, is very close, the calculating faculty being found also, as a rule, in childhood only and disappearing before adolescence From the details of this calculating faculty as given in THE LANCET and by F. W. H Myers,[*] it is obvious that the faculty must be a purely automatic function of a localised area of the brain. This being so, the hypothesis that one of the areas of brain concerned with the faculty of speech is endowed with the analogous capacity for comprehending the intended meanings of spoken sounds is not, I submit, either improbable or unreasonable

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[1] THE LANCET, 1924, i., 464, 873.

[1] THE LANCET, 1922, ii., 1090, 1154, 1205, 1259, and 1312; and 1923, i., 58.

I am, Sir, yours faithfully,
J W TOMB

Asansol, Bengal, India, March 11th, 1926

*⁎* *The controversy resolves itself into the question* whether speech is to be regarded as an 'instinct" or as a "capacity' or group of capacities. It is both If instinct is, as it is generally defined, an impulse to act in certain ways in the presence of certain stimuli, then speech is entitled to rank as such, the provocative impulse being the speech of others—hence the echolalia of the young child and the dumbness of the deaf Or, if we say this is only imitation, is not imitation an instinctive tendency? No one will deny, however, that more than instinct is involved, and that the full appreciation and command of language depends upon general intelligence and upon *certain specific capacities.* We are not convinced that a specific capacity to comprehend the meanings of spoken words is a sufficient explanation of the phenomena Dr Tomb describes, if, indeed, it explains them at all Dr Tomb admits that the meaning of certain nouns and verbs is acquired by "means other than speech," but surely he does not seriously contend that the acquirement of the meaning of prepositions or conjunctions is explained by a mere capacity They must be taught or suggested in some way A capacity may explain language, but certainly not *a* language. Investigations into the vocabulary of young children have shown that the correct understanding *and use of prepositions* and conjunctions is a late acquisition, as compared with that of nouns and verbs, they are dependent upon a further development *of intelligence* *Dr* Tomb's suggestion that this capacity may be analogous to the calculating faculty of young prodigies is scarcely supported by the comparative rarity of the calculating faculty and its disappearance at adolescence. The difficulty felt by the adult is not that of comprehending meaning but of retaining the new words. It is difficult to see how Dr Tomb's theory explains the easy acquirement of several languages by young children in India in contrast to the relative difficulty felt by adults.—ED L.

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[*] Human Personality Chapter III pp 51–35

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YORKSHIRE MINERS AND CANCER CAMPAIGN —The Council of the Yorkshire Miners Association decided by a large majority that a levy of 1s per full member and 6d per half member should be made in aid of the Cancer Research Fund The levy will apply to all men and boys working in or about the mines, and it is estimated the *total to be raised will be more than £5000*

DONATIONS AND BEQUESTS —Miss Agnes Henderson M D, M B.E. of Nagpur Central Provinces India, left £1500 to her brother for distribution amongst various hospitals and charitable institutions in accordance with instructions already given to him, and 5000 rupees to the Mure Memorial Hospital, Nagpur, the income to be applied towards the upkeep of a bed in that hospital.—Mr Daniel Scotchford Elliott Horsham left £1000 each to the Horsham Hospital and the Sussex County Hospital.—Sir John Ritchie Findlay has given £10 000 to the Edinburgh Royal Infirmary managers to complete the purchase price of £90 000 for George Watson's College —The executors of the late Mr James Pickup, Hightown Liverpool have sent a *cheque for £1000 to Blackburn* Royal Infirmary for the endowment of a bed in memory of the donor's son James Edward Pickup —Mr Milton Haydock of Great Harwood near Blackburn besides bequests to public bodies including a house and land, left £2000 each to Blackburn Royal *Infirmary, Great Harwood* and District Nursing Association and Blackburn Crippled Children's Aid Society, and £500 to Whipshire Orphanage.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS

### *The Coroners Bill.*

THE Coroners (Amendment) Bill, which was read a third time in the House of Lords on Monday, March 29th, was introduced in the House of Commons on Tuesday, *March 30th and read a first time*

### *The Protection of Animals Act, 1911 (Amendment) Bill*

On Tuesday March 30th, Dr DRUMMOND SHIELS introduced the Protection of Animals Act, 1911 (Amendment) Bill which was read a first time.

### *Easter Adjournment.*

The House of Commons adjourned for the Easter recess on Thursday April 1st, until *Tuesday, April 13th*

## HOUSE OF COMMONS

THURSDAY, MARCH 25TH.

### *Poor-law Infirmaries.*

Mr BROAD asked the Minister of Health *if he would give* a list of towns of upwards of 100 000 inhabitants showing the number of Poor-law infirmaries in each and giving figures showing the average number of patients the number of *medical staff and the number of nursing staff* —Mr NEVILLE CHAMBERLAIN replied: The following statement gives the information desired so far as it is available (omitting London):—

| Towns or urban districts with over 100,000 inhabitants and union (U) in which comprised. | Separate Poor law infirm. in union. | Av No patients year ended 31/3/25 | Medical staff. | Nursing staff |
|---|---|---|---|---|
| Birkenhead (U) | 1 | 466 | 4 | 90 |
| Birmingham (U) | 2 | 1107 | 15 | 302 |
| Bolton (U) | 1 | 480 | 3 | 86 |
| Bristol (U) | 1 | 684 | 6 | 81 |
| Croydon (U) | 1 | 425 | 3 | 88 |
| Tottenham (Edmonton U) | 1 | 827 | 11 | 170 |
| Leeds (U) | 1 | 980 | 5 | 153 |
| Leicester (U) | 1 | 461 | 3 | 87 |
| Manchester (U) | 1 | 478 | 3 | 140 |
| Newcastle-on Tyne (U) | 1 | 555 | 5 | 111 |
| Nottingham (U) | 1 | 678 | 4 | 130 |
| Portsmouth (U) | 1 | 600 | 3 | 90 |
| Salford (U) | 1 | 806 | 5 | 150 |
| Sheffield (U) | 1 | 537 | 6 | 107 |
| Southampton (U) | 1 | 418 | 3 | 75 |
| Stockport (U) | 1 | 310 | 2 | 61 |
| Liverpool (West Derby U) | 2 | 1323 | —* | —* |
| East Ham<br>Leyton<br>Walthamstow<br>West Ham<br>(West Ham U) | 3 | 1337 | 10 | 212 |

* No information.

In the unions comprising the following towns or urban districts having over 100 000 inhabitants, there are no separate Poor-law infirmaries for the reception of the sick: Blackburn, Bradford (Yorks) Brighton Burnley, Cardiff, Coventry Derby Gateshead, Huddersfield, Kingston-on Hull Middlesbrough Norwich Oldham, Plymouth, Preston, *Rhondda Saint Helens Southend-on-Sea South Shields,* Stoke-on Trent Sunderland, Swansea, Willesden, and Wolverhampton.

Mr BROAD asked the Minister of Health what number of beds were available for patients in Poor law infirmaries *in London and the* provinces, respectively; and how many beds on the average were vacant during the periods of October to March and April to September, respectively —Mr NEVILLE CHAMBERLAIN replied I regret that this information is not available in exactly the form suggested by *the question I hope* that the statement below will give sufficient information for the hon. Member's purposes:—

*Separate Infirmaries Provided by Boards of Guardians in London and the Provinces*

| — | Separate Poor-law infirm. | Accommodation Jan 1st 1925 | Inmates Jan. 1st, 1925 | Av No inmates year ended March 31st, 1925 |
|---|---|---|---|---|
| London | 27 | 10,330 | 13 990 | 13 611 |
| Provinces | 30 | 17,517 | 11,804 | 11,835 |

### *Service Men and Tuberculosis.*

Dr. VERNON DAVIES asked the Prime Minister whether he was aware that during each year a number of officers and men were invalided out of the Army, Navy, and Air Force suffering from pulmonary tuberculosis; that as a rule it was impossible accurately to determine whether the disease was attributable to the conditions of service or not; that the large majority of cases were decided as not being so attributable and consequently received no pension on account of their disability; and that the only money the men received during their prolonged and debilitating illness was from the National Health Insurance, which was inadequate for the purpose; and whether he would consider the possibility of instituting a form of insurance (compulsory or otherwise) for officers and men in these services against this disease, so that on being invalided out of the services for this disease they might receive a pension adequate for their needs until recovery or death.—Mr. CHURCHILL (Chancellor of the Exchequer) replied: I am advised that the answer to the first and third parts of the question is in the affirmative. As regards the second part of the question, the disease is prevalent throughout all classes and all occupations, and unless there is evidence that the patient has been exposed to abnormal conditions of service to which he would not have been subjected in ordinary life, the disease cannot be held attributable to the service. Every case has therefore to be considered on its merits. As regards the fourth part of the question, the non-effective benefits granted to officers in non-attributable cases are considered sufficient, having regard to their ages and length of service. In attributable cases these grants are increased by supplementary allowances which in cases of total disablement amount to £100 a year. In addition grants in aid of sanatorium expenses are made so long as the officers remain on the active list. Men invalided for tuberculosis are entitled to the benefits of the National Health Insurance Acts, and, in addition, to a pension for life if they have 11 years' service (or 10 in certain cases). In attributable cases the pension based on service is supplemented by a further allowance in respect of the disablement. Where the service amounts to less than the above periods a gratuity is payable. As regards the last part of the question, I do not think it would be practicable to differentiate between tuberculosis and other non-attributable diseases, so far as insurance is concerned.

### *Vermin in the Hinckley Workhouse.*

Sir CHARLES OMAN asked the Minister of Health whether he was aware that at a debate of the Hinckley Board of Guardians the statement was made by the master that the rooms inhabited by the tramps were verminous, and men's shirts, after they were washed, were in the same condition, and that he could do nothing more at present; that the board discussed the purchase of a calefactor and a disinfector and the prospect of obtaining a loan from the Ministry for such purchase; and whether he would grant the loan and spread over the time for repayment as long as possible, so as to encourage these and other guardians to take vigorous steps to prevent the spread of vermin.—Mr. NEVILLE CHAMBERLAIN replied: Plans for the provision of improved casual accommodation in this union are at present under consideration, and sanction has been given to the raising of a loan for ten years for the purpose referred to in the second part of the question.

### *Milk and Dairies Draft Order.*

Mr. LAMB asked the Minister of Health whether his attention had been called to the serious delay which had taken place in connexion with the printing and circulation of the Draft Order proposed to be made under the Milk and Dairies (Consolidation) Act, 1915, and to the consequent difficulty of making its contents known to the great number of persons affected; and if he would extend the time during which representations might be made to him with regard to the provisions of the Draft Order.—Mr. NEVILLE CHAMBERLAIN replied: I am aware of the delay referred to by my hon. friend and I shall, in view of it, be pleased to extend the time during which any representations may be made to me as to the Draft Order until the *end* of April.

### *Dispensers in the Army.*

Sir PHILIP DAWSON asked the Secretary of State for War how many men in the British Army held the army qualification of dispenser; and how many of these army dispensers were actually employed at the present time in dispensing duties.—Sir L. WORTHINGTON-EVANS replied: The number of soldiers serving in the Royal Army Medical Corps who hold the army qualification of dispenser is 352, of whom 193 are employed on dispensing duties.

## MONDAY, MARCH 29TH.

### *Deaths and Sickness among Coke Oven Workers.*

Mr. STEPHEN MITCHELL asked the Home Secretary the number of deaths and the number of cases of illness which occurred annually among those working at coke ovens and furnaces; the average length of time employees were able to stand this form of work; and if this employment was classed as a dangerous occupation.—Sir W. JOYNSON-HICKS replied: I regret that the information asked for in the first two parts of the question is not available. As regards the last part, employment at coke ovens has not been treated as an unhealthy occupation. No complaints of sickness among coke oven workers have been received, and it would appear from the mortality tables published in Part IV. of the Supplement to the Seventy-fifth Annual Report of the Registrar-General for England and Wales (pp. 2 and 31), that the mortality among coke burners in the three years 1910–1912 was considerably below the average for the population generally.

### *Medical Needs in East Africa.*

Mr. BENNETT asked the Secretary of State for the Colonies whether he was aware of the representations now being made by the British Social Hygiene Council for a percentage of the East African Development Loan to be allocated to urgent medical needs in those areas in which development works were to take place; and whether this purpose came within the scope of the East African Development Loan.—Mr. AMERY replied: I am aware of the representations referred to. I must not anticipate either the advice of the Committee which I have appointed to consider the services to be met out of the loan or the decision of Parliament as to the provisions of the legislation which is required. It is, I think, generally recognised that provision should be included for capital expenditure on medical research, but I doubt whether it would be desirable to spend the loan money on recurrent services which are, or should, normally be met from annual revenue.

### *Indian Transferred Services.*

Mr. WALLHEAD asked the Under Secretary of State for India what subjects, services, duties, and responsibilities had been transferred by the Secretary of State for India from the India Office to the Office of the High Commissioner for India since the establishment of the latter office; and what consequential changes of staff had taken place.—Earl WINTERTON replied: The staff of the High Commissioner for India now deals (among others) with the following subjects, which have been transferred to his charge from that of the Secretary of State in Council: Indian students, leave-pay, pensions and passages of civil officers, recruiting in United Kingdom of all civil officers except those of the all India services, and a few special appointments, and opium and dangerous drugs. In all cases transfer of work has been accompanied by transfer of staff formerly employed upon it in the India Office, the total number so transferred since the formation of the High Commissioner's office being approximately 500.

### *Assistance for Blind Persons.*

Captain FRASER asked the Minister of Health how many local authorities had made, or had under consideration for early application, schemes which gave blind persons in their areas an assurance of a minimum income equal to or greater than that provided under the scheme proposed to be inaugurated by the Hull Town Council under the Blind Persons Act, 1920.—Sir K. WOOD replied: Twenty-two authorities have made, and 12 authorities have under consideration, arrangements similar to those under consideration in Hull for the augmentation of the incomes of blind persons to a fixed amount, but my right hon. friend is not aware of any case in which it is proposed to give an assurance of a minimum income equal to or greater than that contemplated by the Hull Town Council.

### *Experiments in the Utilisation of Whey.*

Mr. AMMON asked the Minister of Agriculture the objects of the lactose factory erected by the State at Haslington in 1919–20; and the progress realised in the discovery of new processes.—Mr. GUINNESS replied: The object of the lactose factory was to discover an economic process for the utilisation of whey. In the opinion of those directly concerned with the experimental work this object has been achieved. The process is described in a monograph recently published by the Ministry.

## TUESDAY, MARCH 30TH.

### *Miners' Industrial Diseases.*

Mr. CHARLES EDWARDS asked the Secretary for Mines whether he was aware that miners' nystagmus and other diseases to which miners were liable were not included in the Third Schedule of the Workmen's Compensation (Consolidated) Act, 1925; and as Section 41 did not preclude payment of compensation for any diseases not mentioned in the above Schedule to that Act, what steps he proposed to take to make clear the position of persons contracting these diseases after May next.—Sir WILLIAM JOYNSON-HICKS replied: The Act of 1925 was a purely consolidating measure, and the reason why miners' nystagmus, beat-knee, beat-elbow, and beat-hand are not specified in the Third Schedule to the Act is that they are not specified in the corresponding Schedule to the Act of 1906. The right to compensation, however, in respect of these diseases remains unaffected. They were brought within the Act of 1906 by Orders made by the Secretary of State under Section 8 of that Act, and it is expressly provided in the 1925 Act that any Orders in force under a previous Act shall continue in force and have effect as if made under the 1925 Act. Subject, therefore, to the provisions of any future Orders, the new Act will apply to these diseases in precisely the same way as the present Acts. The position is quite clear, and I do not think it should be necessary for me to take any special steps in the matter.

### *Cost of Health Services.*

Mr. HERBERT WILLIAMS asked the Minister of Health the total amount provided by the Exchequer for national health insurance and for all other health services in the financial year 1913–14 and in the Estimates for 1926–27.—Sir K. WOOD replied: The total amounts provided by the Exchequer for national health insurance and for all other health services administered by the Ministry of Health or its predecessors (excluding grants out of the assigned revenues and the cost of central administration) in the periods specified are as follows:—

| | Expenditure *1913–14.* | Estimates, *1926–27.* |
|---|---|---|
| For National Health Insurance— | £ | £ |
| Statutory proportion of benefits (other than sanatorium benefit) and cost of administration . | 1,709,535 | 5,427,000 |
| Special grants towards cost of medical benefit and administration . .. .. | 1,529,500 | NIL |
| Statutory proportion of sanatorium benefit .. | 100,000 | |
| For other health services (including in 1926–27 grant in lieu of sanatorium benefit) . .. | 183,134 | 3,076,100 |
| Total .. .. | £3,533,480 | £8,503,100 |

### *London University and Bloomsbury Site.*

Dr. LITTLE asked the Chancellor of the Exchequer what communication had been made to the Duke of Bedford with regard to the reversion to the vendor of the Bloomsbury site, which had been declined by the University of London because of the impossibility of fulfilling the conditions of Mr Fisher's offer of 1920.—Mr. CHURCHILL replied: Notice has been served on the solicitor to the Bedford Estate offering the re-sale of the Bloomsbury site to the Duke of Bedford pursuant to the provisions of Clause 7 of the Conveyance of March 23rd, 1921.

## WEDNESDAY, MARCH 31ST.

## THE ECONOMY BILL.

### *State Contribution to Health Insurance.*

The House went into Committee on the Economy (Miscellaneous Provisions) Bill, Mr. JAMES HOPE in the chair.

On Clause 1, which reduces the State contribution to the national health insurance scheme,

Mr. HARNEY moved that the clause be postponed. He said that there could be no doubt that this clause very intimately affected the approved societies. Not only did it alter the whole of the financial structure of the scheme, but it altered the benefits that they would be able to pay. This Bill could not possibly be completed before Easter and there was in his submission the strongest possible ground for this clause, which went to the root of the mischief as the approved societies saw it, not being dealt with until the societies had had an opportunity of considering it.

Mr. P. HARRIS seconded the amendment. He said this clause was the most controversial in the Bill. They were bound to criticise it word for word and line for line so long as the various friendly societies were not satisfied. Those societies were all meeting at Easter with this terrible cloud over them and they were bringing pressure on Members on all sides of the House to attack this clause. They were reasonable people, and it was possible that they might be placated. The Minister of Health might be able to make some concessions which would ensure the smooth passage of the clause. He thought, therefore, that the Minister would be wise if he agreed to postpone this clause to the end, so that he might have time to consult all the parties concerned and get the coöperation of the friendly societies instead of their hostility.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said that he was bound to resist the proposal. No valid reason had been advanced why the clause should be postponed. They were not dealing here with an ordinary amendment of the Insurance Act; they were dealing with an Economy Bill. It was well known that they could not fix the date for the opening of the Budget until they had disposed of this Bill. As regarded concessions, he had no reason to suppose that if on this Bill suggestions were put forward which did not affect vital matters that he would not be able to make concessions.

Mr. LLOYD GEORGE said there was no doubt at all that this was a question which the societies ought to have time to consider. The House of Commons was now adjudicating on a proposition which was never before the country at the last General Election. It was a new change—a change which even the Chancellor of the Exchequer did not anticipate last year.

Replying to further discussion,

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said that this clause had been before the approved societies for three weeks. They had been given as much information in regard to it as had been given in connexion with any proposal that had been before the House for some time. There was an actuarial report, and there was an exposition of the clauses of the Bill. Explanations were fully given. Immediately the present Bill was introduced the Minister of Health called together the Consultative Council representing all the approved societies in the country. That meeting was held, he believed, on the very day when the text of the Bill was available to members of the House. His right hon. friend made a statement to that gathering and explained at considerable length the provisions of the Bill. After having considered the proposals at length, carefully and seriously, the Consultative Council came to the conclusion that while they had no objection to Clause 2 they were opposed by a majority of 28 to 6 to the proposals of Clause 1. There was no proper reason, however, why Clause 1 should be postponed. If at the conferences up and down the country at Easter any practical suggestions were put before his right hon. friend, he would be glad to consider them and they could be dealt with at other stages of the Bill.

After further discussion Mr. J. H. THOMAS moved that the Committee "Report Progress." This was defeated by 227 votes to 121, and the discussion on Mr. Harney's amendment was resumed.

Some time later, Mr. CHAMBERLAIN moved the closure which was carried by 232 votes to 127. The motion to postpone the clause was then negatived by 229 votes to 129.

### *The Question of a Broken Pledge.*

The Committee then proceeded to a long discussion on the general principle of Clause 1 on an amendment moved by Mr J. H. THOMAS, the object of which was to prevent the clause being operative until the next General Election. The right hon. gentleman gave numerous quotations from speeches delivered during the passage of the original Insurance Act in 1911 to support his contention that pledges were given to the approved societies with regard to the amount of a State contribution, which were being broken in the present Bill. He said he wished to contrast the treatment that the approved societies had received from the Government with that which the societies had meted out to the Government. References had been made in the debate to the difficulties experienced owing to the threatened trouble with the doctors. Immediately the facts were put to the approved societies they took the responsibility of saying: "The State is in a difficulty; we will help them out with their burden." At the same time the societies were promised a Royal Commission, and now having helped the State, having provided the money and taken over a liability which they need not have taken over, and which if they had forced the hand of the State Parliament would have had to take over—although the societies had acted in this way at the time of the ultimatum issued by the doctors—this was the way that they were being repaid! He asked the Committee to ponder before they took this step which the Government asked them to take. What was the amount of money to be saved? Just under £3,000,000. The great Economy Bill provided £10,000,000 all told, every copper of which came from the sick, the maimed, and the children, and, worst of all, from the unemployed. Although he fully anticipated the fate of his amendment, he knew the ultimate verdict and judgment would be determined not inside but outside the House.

Mr. LLOYD GEORGE said he had great pleasure in supporting the amendment moved in a very powerful and convincing speech by Mr. Thomas. The Minister really responsible for this outrage was not present to defend it. The real artful dodger was not there, and it had been left to the Minister of Health to defend something which he thought in his heart he must feel to be rather indefensible. He was told that it was a question of economy. If the country were really hardly pressed and it was a question of £2,000,000 or £3,000,000 to extricate it from its difficulties, no one believed that the 15,000,000 workmen in the insurance societies would decline to consider it. But now when the national burdens had decreased—they were down by

£200,000,000 or £300,000,000 since 1920—and when the benefits under this scheme had matured, for the Government to say that they would take away this £2,800,000 was not a very reputable thing to do. The Government might have consulted the societies, but they had not done so. Was it worth while in order to save ½*d.* in the £ on the income tax to deprive workmen of the benefits to which they were looking forward for the last 10 or 15 years, and especially at a time when there was so much industrial trouble brewing? *Would it not cost* the Exchequer a great deal more in the end? If the Government had suspended the building of even one cruiser they would have been more than able to supply the money required over the next three years, and in that period the country would be recovering. When prosperity returned and the revenue returns went up, the Chancellor of the Exchequer would be able to meet the liability, and probably to decrease the taxation very considerably.

### *The Minister of Health's Reply.*

Mr. CHAMBERLAIN said that they had been again reminded that this was a question of a bargain and of a breach of faith. He had not been able to understand what was exactly the bargain which Mr. Thomas and Mr. Lloyd George said that the Government had broken. Under the original scheme the contribution was 7*d.* and the benefit 7*d.* Under the Act of 1920 the contribution was raised to 10*d.*, but the benefits were also raised to 10·7*d.* As a result of the Pensions Act the contribution was reduced to 9*d.*, but the benefits were reduced only to 10½*d.* Therefore, if they made no alteration in the State contributions people would actually be receiving benefits worth 1½*d.* more than the contributions. Until they had a report of the Actuarial Committee and the report of the Royal Commission it was impossible to say what reconstruction was possible and feasible. But it was quite a mistake to suppose that this reconsideration and review of the whole scheme for national health insurance arose solely out of the need of economy. It would have had to be reviewed in any case. The original scheme was merely experimental. The scheme had been amended in all sorts of ways, but this was the first time that there had been a full review of the whole scheme as they found in the report of the Royal Commission. In any case they were bound to review the financial basis of the scheme and make some alteration in it. The investigation showed that there was a margin in the contributions over and above what was required to provide the benefits under the existing category. The margin was greater than was necessary even to provide the additional benefits distributed already. The Royal Commission while disclaiming any duty to say whether or not that margin should be taken by the State—a question on which they were not competent to speak—showed there was a margin, and on the assumption that it was not to be taken by the State they made certain recommendations. The first of those recommendations was that the full cost of medical benefit should fall on the funds of the approved societies. That was, of course, embodied in the present Bill. There would remain a further sum which the Royal Commission recommended should be used in a certain way for additional insurance benefit. That was the sum which under this Bill the Government were taking because of the needs of the country. The needs of the country were not going to be satisfied by £2,800,000 a year, but in taking a general view of the financial needs of the nation and looking round to every department and every source to see what could possibly be saved and what reductions in expenditure could be made they would not have done their duty if they had neglected to consider the report of the Royal Commission and the opportunity afforded them to take some of the margin. He took any charge of a breach of faith as a serious matter, and he made no distinction between pledges made by himself and those given by other Ministers who had preceded him; and if he thought that in these proposals any charge could fairly and properly be brought against them of breaking their pledges certainly he would be no party to them. He did not deny that pledges were made in 1911, but he contended that they were keeping those pledges. The Government were not raiding surpluses; the surpluses were entirely untouched by the Bill. After this Bill was passed the societies would still continue to reap the benefit of their thrift and their careful and economical management; but the report of the actuary and the report of the Royal Commission showed without any shadow or vestige of doubt that the surpluses which had been accumulated to such a gigantic figure had been due in the main to extraneous causes which were not to be described as due to anything that had been done by the societies, but arose mainly out of the extra rate of interest which they were enabled to earn. The rate was 3 per cent., which was taken into account by the actuaries when they were making their calculations as to the appropriate rate of contribution by the State in the original scheme. Now that the rate of interest was 5 per cent. instead of 3 per cent. it was reasonable that they should review the whole situation. He denied the statement that the Government had not treated the societies fairly. Various Governments had taken upon themselves the burden of the extra cost of diseases estimated at £10,000,000 and on account of minor charges another £5,000,000. He might also mention other things such as provisions for the improvement of the public health, &c., provisions for the relief of tuberculosis, sanatoria, *maternity and child welfare schemes, and so forth. All* those meant that to the extent they had been successful they had relieved the approved societies. The Government said to the societies: "You really do not require this extra money so much that we are justified in asking the taxpayer to find it for you." The societies had been able to distribute benefits among their members at a far higher level than they ever had any reason to expect, and when the whole country was suffering from a heavy burden of taxation it was not reasonable that they should go on accumulating surpluses at this rate. The actuary had given it as his considered opinion that the proposals of the Government would not touch any of the benefits which the societies had contracted to pay to their members. He thought that hon. Members opposite were too pessimistic about the future of the approved societies. They had seen a steady rise in the rate of accumulation of surpluses in the past. In the first period of six years they were £17,000,000; in the second period, which was only four years, there were accumulated surpluses including the carry forward and the contingency fund amounting to £15,000,000, and in the remaining period of only about two years it was already estimated that there were accumulated surpluses amounting to £20,000,000 additional. Under the Pensions Act the societies were relieved of the liability of cash benefit to people between 65 and 70, and that applied to additional benefits just as much as to normal benefits. The second point was that the average of contributions per year was steadily going up. At one time the average contribution was 43, but it was now 47. He dare say it would go higher still if unemployment continued to decrease. These were figures which gave them a certain amount of confidence in the future, and he was very strongly of the opinion that in spite of the diminution in the State contribution proposed in this Bill when the third valuation came round the surpluses would be sufficient to enable the approved societies to continue all the benefits which they had been able to declare under the second valuation.

### *Danger of Restricting Benefits.*

Dr. DRUMMOND SHIELS said that the more he considered *this measure the worse it seemed to get. He had hoped* that, as had been indicated by the right hon. gentleman on more than one occasion, the present benefits and the additional benefits which either had already been given or had been sanctioned under the second valuation would have been safe until 1931, but he thought it was very obvious on reconsideration of all the facts that even the extended benefits were in very great danger. He had been impressed with the ability displayed by the officials of the approved societies in the carrying out of their work, and he thought that their opinions were entitled to very serious consideration. There was no doubt they believed that not only would the further extension of medical benefit be prevented by this Bill, but where they paid the present extended benefit and gave extended medical treatment it would be impossible for them in many cases to carry on till 1931. The approved societies were faced with an immediate reduction of income starting from the time this Bill became law. There had not been very much said about the fact that the increased charge for medical benefit, which did not mean increased payment for the doctors, but was simply a transfer of the liability for the last increase from funds which the approved societies permitted to be raided two years ago, would undoubtedly involve an increased expenditure by approved societies. Therefore, as between the reduction of the State contribution and the increased cost of medical benefit it seemed to be quite inevitable that the splendid additional benefits which had been given by many societies would have either to be modified or withdrawn altogether, and certainly societies which did not give them now would not be able to give them in the future. Was this really economy? Take the matter of the dental benefit which had been given by a number of approved societies, but not by others. There could be no question about the tremendous value to public health of a dental service. Even from the point of view of economy it would be very desirable that a full dental service should be given by every approved society. It not only prevented many branches of disease, but it gave also a very greatly increased comfort and happiness to the individual. There was no question that this Bill when it became an Act would prevent the extension of this medical benefit in the shape in which it was already given, and in other cases it would prevent it being brought into operation. The same applied to optical benefit, which was of very great importance for those who required that form of treatment. Again, take the question of maternity benefit Various societies had been able to increase that benefit At the present time it only amounted to about £2, and all that money went either to the doctor or to the midwife and the person most concerned was left with the baby to hold. He thought it would be agreed that double the existing benefit, amounting to £4, which in some societies had been raised to £3 with the contributions of the husband and wife, if they were both insured, was about the least that was useful or desirable for maternity benefit It was extremely important that they should get to the stage of giving that benefit at as early a time as possible But that again was going to be prevented by this Bill. The Pensions Act was supposed to relieve approved societies of a liability of £37,000,000 He had not heard it stated that as against that provision had been made for a reduction of reserve value and prospective income of societies to an extent roughly equivalent to the amount of that relief. The circumstances which brought about the higher rate of interest had also increased in similar proportion the expenses of administration. One of the gravest charges against the Government in connexion with this matter was that they had gone against the recommendations of the Royal Commission, which contained among its members the Government Actuary, and which actually said that the payment by the Exchequer of its present proportionate share of the cost of benefits and their administration should be continued. The proposals of this Bill were not an economy at all, but a grave set-back to social progress. It was bad enough to diminish the prospect of continued extra benefit such as the dental, optical, and other benefits, but one of the worst things was the fact that the Bill postponed indefinitely the provision of specialist medical treatment Practically all the witnesses before the Royal Commission put those benefits first, and the Royal Commission put them first whenever funds were available. He did not think that hon. Members realised the tremendous importance which approved society officials and insured persons themselves attached to these services. At the present time if a well-to-do person was ill, and his doctor was in attendance on him, the doctor might come to the conclusion that a surgical operation was possibly required He might have some doubt as to the diagnosis, and he would then suggest to the relatives that he would like a second opinion. The relatives said, 'Certainly" Then the doctor could go to the telephone and call up a specialist, who came in an hour or two and the patient got the full benefit of the specialist service. In the case of an insured person the man s doctor might be in the same difficulty If he put the same question to the relatives they would say that they could not afford a specialist s fee. Then the doctor would have to say: 'We will have to try the hospital.' But, as he had pointed out in the debate in the second reading of this Bill, so far as Scotland was concerned —and he thought that the same applied to England—there was a waiting list in the six main Scottish hospitals of 5800 people waiting for beds. The Committee which had just been considering the question of the Scottish hospitals had reported that many of these people suffered as a result of their waiting and some even died, as a result of hanging on waiting for a bed. He felt that the insurance medical service would never be anything but partial and very unsatisfactory until it included the fullest possible benefits which modern medical science could give. A new arrangement with the doctors was imminent, and would take place at the end of this year, but supposing that a composite arrangement might be made would it include a specialist service? The additional medical charge in view of the financial circumstances of the approved societies would make the position of the societies impossible. He was afraid, therefore, that the specialist inclusive service they might have had normally next year must be put off now until some unknown time. Many approved societies had realised the importance of these specialist services and had made arrangements with hospitals nursing associations, dispensaries, and other organisations, in order that a certain amount of specialist service and institutional treatment might be secured for their members. That would probably be cut off at once, because it was paid for not out of the surplus but out of the ordinary benefit fund. So it seemed to him that the hospital problem, which was deplorably bad in Scotland and also in England, would be made worse as a result of the cutting off of these contributions. If there was any money to spare in connexion with this fund there were innumerable ways in which it could be spent, not only for the advantage of the insured people, but also to make the fund what it was proposed to be at first—a full and complete medical service for the very humblest insurance contributors.

The closure having been carried, Mr Thomas s amendment was negatived by 209 votes to 118

Mr BLUNDELL moved an amendment providing that the Government should continue to pay their two-ninths contribution towards the cost of the statutory benefits, and that the societies should bear the cost of the other benefits which they were able to provide That would mean that the Government would save a considerable sum of money without upsetting the finances of the approved societies. They would save, according to the actuaries' report, £1,200,000 in 1926-27, £1,500,000 in the following year, and thereafter an average of £1,200,000

Mr CHAMBERLAIN said the amendment was a very startling one It meant that from the financial point of view he was going to lose, if he accepted the amendment, £1,500,000 in the first year out of the £2,800,000 and £1 000,000 a year after that. He was not closing his mind to any modification in the Bill which did not go to the root of its vital principles. But to cut the saving in half was obviously more than he could be expected to accept If the hon. gentleman could suggest some way of covering the proposal which would go some way towards meeting his fears, and at the same time would not cut away the savings until they were no longer perceptible, he should be glad to discuss matters with him.

Mr BLUNDELL expressed his willingness to withdraw the amendment but the Opposition objected The closure was carried by 200 votes to 114, and the amendment was then rejected without a division.

Progress was reported

## Medical News.

UNIVERSITY OF LONDON.—Amongst the recipients of degrees on March 24th were Margaret M. A. Murray (M.Sc., physiology), Egon Sharpe Pearson (D.Sc., statistics), and Ethel May Newbold and Leonard H C. Tippett (M.Sc., statistics)

The following have satisfied the examiners in Part I of the Third Examination in Dental Surgery: Cyril Hall, Frank S. Kursin, and Cyril G Walmsley, all of Guy's Hospital.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND —At recent examinations for the Diploma in Tropical Medicine and Hygiene the following candidates were successful —

Ahmed Khalil Abdel Khalik and Mahmoud Abdel Hamid Atiya, Cairo, Basil N V Bailey, Edinburgh, Hargobind Lal Batra Punjab and Edinburgh, Hugh B Boucher, St. Thomas's, Gwendolen S M. Chataway, Royal Free and St. Mary's Ernest E. Claxton, St Bart.'s; Abdel Kader Hilmi El Shurbagi, Cairo, Silvio C Gomes, Edinburgh; Geoffrey D Gordon Cambridge and St. Thomas's, Frank G Greenwood, St. Bart.'s, John R. Hayman, Middlesex and Royal Army Medical College, Margaret Holliday, Dublin, Laura M Jacobs, Royal Free and St. Mary's, John J Keevil Cambridge and St. Thomas's, Harold D B. Miller, Melbourne; Richard M. Morris, Cape and London, Edward A Penny, Guy's John O. Pyper, Glasgow, Reginald D Reid St. Bart.'s, Ernest A. Struthers, St. Andrews, Arthur G Taylor, Birmingham Leo G W Urich, Middlesex; William J Webster, Aberdeen, Isabel J Woodhouse, Royal Free, Li Tsoo Yiu, Hong Kong, and William A. Young, Oxford and St. Thomas's. (All the above with one exception were students at the London School of Hygiene and Tropical Medicine)

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

### FINAL MEDICAL EXAMINATION

*Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene, Pathology and Bacteriology*—*Robert R. Woods, *Maurice F N Griffin *Thomas C. M. Corbet, Maximilian Gerber Edward G Montgomery, Isidore Isaacson, Samuel R. Elmes, Ralph W T H. Stewart, Hyman Dundon, Henry A. Ferguson, John M M Elligott, Louis R. Brumberg Isaac F Ratthaus, Wilhelm F Knobel John K Harper, and Cecil F Cope.

*Part II, Medicine*—*Henry O Clarke, *Arthur J Conlin, Ernest H Hall, Philip F. Palmer, George A. Walmsley, Thomas J W. Keown, William O. G Potts, Jack M. Selkon, Edward W Bingham Malben A. W Roberts, Nancie N Lowther Andrew L. A. O Byrne, Isabella K. M Neilly, Elias Rakoff, Kathleen I Purdy, Thomas F M Woods, Samuel Smyth George W H Townsend, Richard T P Tweedy, Gerald V A. Griffith George G M Farland, Donald B. O'Sullivan Beare, Edward H Harte Evelyn E. Connolly, Caleb P Wallace James Craig, James G. M Dowell, Robert H Mitchell, Ernest E. Malone, and Daniel J Roux.

*Surgery*—*Seymour F Heatley, Ransome M Allardyce, George W H Townsend Charles R. Boland, George A. Miller Henry J Roche David N Power, John H M Lean, Margaret W Pike, Mary S Miller, Richard G Keays, Johan N S. Gouws, Joseph V Pincus William Russell, Herbert Nelson, Gerald A. A. Powell, Lucy E. R. Pigott, Mabel E. Brittain, Cicero G. Nel, Gilbert T. L. Archer, Arthur B. Brooks, Wolsey C. Sloan, James F. MacMahon, William G. Maule, Albert Sachs, Charles L. Taylor, and William Magowan.

*Midwifery.*—*Ernest E. Malone, Ernest E. Satchwell, Samuel Smyth, Derek St. C. Mackenzie, Henry A. Ferguson, John Quigley, John B. Patrick, Charles F. M. Wilson, Martinus G. J. Booysen, Norah E. Fenton, John Johnston, Norman J. U. Mather, and William P. Culbertson.

* Passed on high marks.

INTERMEDIATE DENTAL EXAMINATION.

*Anatomy and Physiology.*—Francis J. P. M'Carthy.

FINAL DENTAL EXAMINATION.

*Dental Surgery and Pathology; Dental Mechanics and Metallurgy; Orthodontics.*—Eric N. Guise-Brown.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS.

Isaac Valvl Yoffa.

AUXILIARY ROYAL ARMY MEDICAL CORPS.—The annual meeting of the members of the Auxiliary Royal Army Medical Corps Funds will be held at 2.30 P.M. on Friday, April 23rd, at 11, Chandos-street, Cavendish-square, London, W., when the annual report and financial statement for 1925 will be presented, and the officers and committee for the current year will be elected.

JOINT TUBERCULOSIS COUNCIL: POST-GRADUATE COURSES ON TUBERCULOSIS.—As already announced (THE LANCET, Feb. 20th, p. 403), Prof. S. Lyle Cummins will hold an intensive course at Cardiff from April 12th to 17th for medical men and women specially engaged in tuberculosis work. There will also be a similar course in London from April 19th to 24th. Inquiries should be addressed to the hon. secretary at 19, Brunswick-square, London, S.E. 5.

HUNTERIAN SOCIETY.—The Council of this Society has presented a satisfactory report for the session 1925-26, so that it has been possible to consider the question of resuming the publication of the Proceedings in volume form. As, however, this means the institution of a guarantee fund, the Council will invite expressions of opinion from the constituency. The report also places before the Fellows the advisability of appointing a librarian, in view of the fact that an important collection of books belonging to the Society has been for many years in private keeping. Mr. A. E. Mortimer Woolf has been nominated as President on the retirement of Dr. Howard Humphris.—A dinner meeting of the Society will be held at Simpson's Restaurant, Cheapside, London, on Monday, April 12th, at 7.30 P.M. At 8.30 P.M. the annual general meeting will begin, after which Lord Hewart (the Lord Chief Justice) will read a paper on Criminal Law and its Relation to Insanity.

POST-GRADUATE VACATION COURSE AT DAVOS.—A course dealing generally with tuberculosis and alpine climate (the third of its kind) will be held in Davos from August 22nd to 27th. The programme will include lectures and demonstrations by the medical men of Davos, on the climatology, pathology, diagnosis, and prognosis of tuberculosis. The lectures are given chiefly in French and German, but arrangements are being made this year for certain lectures and demonstrations to be given in English. It is hoped that many English medical men will avail themselves of this opportunity of seeing the great tuberculosis centre of Davos. In former years the course has been largely attended by continental medical men and students, but so far the English attendance has been very meagre. Dr. Bernard Hudson, of the Victoria Sanatorium, Davos-Platz, Grisons, Switzerland, would be glad to supply any further information or assistance, and full particulars will be published later. There will be special terms for railway travel and hotel accommodation.

THE LATE DR. G. W. MALIM.—Dr. George Warcup Malim, who died on March 31st at the age of 80, came of a Lincolnshire family which for generations had given a son to the church, law, and medicine. Educated at Grantham Grammar School, he received his medical training at Birmingham and Guy's Hospital, qualifying as M.R.C.S. and L.S.A. in 1865. After some experience in Bilston in Staffordshire and elsewhere, he went to Rochdale 55 years ago, and there built up a large practice from which he retired only two and a half years ago. Dr. Malim was an out-and-out opponent of the Health Insurance Acts, and resolutely refused to join the panel. He was appointed a justice of the peace for the borough of Rochdale in 1885, and at the time of his retirement was the oldest resident magistrate as well as the oldest medical practitioner in the town. A man of warm and generous sympathies, he won the confidence and affection of his patients, and when he retired was followed by the gratitude and good wishes of his many friends. Of the family of 12, of which Dr. Malim was a member, six are still living. His wife died many years ago; he leaves three daughters.

SIR KINGSLEY WOOD, Parliamentary Secretary, Ministry of Health, has appointed Capt. D. W. Gunston, *M.C.*, M.P., to be his Parliamentary Private Secretary (unpaid).

THE Home Secretary has appointed Lieut.-Colonel John Allan Anderson (formerly of the Royal Army Medical College) to be an Inspector under the Cruelty to Animals Act, 1876.

THE death is announced from Melbourne, Australia, at the age of 71, of Sir Harry Brookes Allen, Dean of the Faculty of Medicine and for many years professor of pathology in the University of Melbourne.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held at the Miller General Hospital, Greenwich, to-day, Friday, April 9th, at 8.45 P.M., when Dr. E. P. Cumberbatch will read a paper on the Treatment of Gonococcal Infections by Diathermy.

SOCIETY FOR CONSTRUCTIVE BIRTH CONTROL.—Colonel R. J. Blackham, M.D., will take the chair at a debate on Birth Control to be held at the Essex Hall, Essex-street, Strand, London, on April 22nd, at 8.15 P.M. Lord Morris will represent the Roman Catholic point of view and Dr. Marie Stopes will speak for the society.

NO. 55 GENERAL HOSPITAL B.E.F.—A reunion dinner will be held at the Trocadero Restaurant, Shaftesbury-avenue, on Saturday, May 15th, at 7 for 7.15 P.M. Old officers intending to be present are asked to communicate at once with Dr. H. B. Roderick, 17, Trumpington-street, Cambridge.

MEDICO-LEGAL SOCIETY.—At an ordinary meeting of this society to be held on Tuesday, April 20th, at 11, Chandos-street, Cavendish square, London, W., at 8.30 P.M., Mr. C. Ainsworth Mitchell will read a paper on Some Aspects of the New Regulations on Preservatives. At the discussion following members of the Society may introduce guests.

LONDON FEVER HOSPITAL.—The 104th annual report shows that the fever patients treated were fewer by 103 than in 1924, in consequence of a fall in the number of cases of measles. But while there were only 39 patients suffering from measles, as against 249 in the preceding year, 196 cases of rubella were admitted—almost as many as the total of the previous four years. There were no deaths from measles or enteric (of which there were only six cases): there was one death from scarlet fever and one from diphtheria. Among the nursing and domestic staff there were 13 cases of diphtheria, three of scarlet fever, and one of rubella.

"CRITICAL CONDITION" OF THE LIVERPOOL HOSPITALS.—Mr. H. Wade Deacon, the chairman, at the annual meeting of the committee of the Liverpool Royal Infirmary, declared that as regards the large general hospitals in the city the voluntary system is in a critical condition. The four large hospitals are getting ever more deeply into debt, but they have agreed not to issue any appeals until the Lord Mayor's Committee has matured its plans for the establishment of a contributory scheme. Mr. Wade Deacon, who has been chairman of the Royal Infirmary since 1912, and has also been chairman of the British Hospitals Association, was last week publicly presented with his portrait by the Lord Mayor of Liverpool in recognition of his services.

THE LATE DR. J. BROWNLEE MILNE.—Dr. John Brownlee Milne, of Penmachno, Bettws-y-Coed, died suddenly at Llandudno railway station on March 16th; he had suffered from heart trouble for many years. Dr. Milne was 46 years of age and a native of Montrose. He graduated M.B. and Ch.B. at the University of Edinburgh in 1900 and then was house surgeon in the Bradford Children's Hospital and in the Stanley Hospital, Liverpool. He practised for a time in Hull and also in the London district; after the war he went back to Liverpool as a ship's surgeon. He served in the war as a captain in the R.A.M.C. and was badly wounded at Arras. At the time of his death he held the appointment of medical officer for Penmachno and public vaccinator for Llanrwst and district.

THE OPTICAL CONVENTION.—Mr. Stanley Baldwin, the Prime Minister, will open the Convention (of which an account appeared in THE LANCET, Feb. 27th, p. 452) on Monday, April 12th, at noon, at the Imperial College of Science, South Kensington. The Convention will last until April 17th and meets under the presidency of Sir Frank Dyson, the Astronomer Royal. It is intended that every branch of science and industry which is interested in optics shall be represented, and the papers and exhibition cover a correspondingly wide range of subjects. For the less erudite there will be popular lectures and an entertainment section which bids fair to be very entertaining indeed. The offices of the Convention are at 1, Lowther-gardens, Exhibition-road, London, S.W.

Sir James Barr has been elected President of the Royal Infirmary, Liverpool

Nottingham Hospital Saturday Fund —Last year the collections for this fund reached £28,708, the largest total yet obtained. This sum supplies more than half the financial needs of the Nottingham General Hospital

Presentation to a Medical Man —Mr J Ernest Nevins, M.B Lond, M R C S Eng, has been presented by the staff at Brownlow hill Infirmary, Liverpool, with a Chippendale cabinet with some other gifts, on his retirement from the post of visiting physician to the infirmary after 26 years service.

The late Dr. R B Alston —In the course of an examination at St. Thomas's Hospital on March 18th for a medal in pathology Dr Ronald Bruce Alston pricked his finger whilst making a post-mortem examination and died from septicæmia ten days later A day or two after the accident he had complained of pain and swelling in the finger, but said that he did not remember having injured it Dr Alston was a student at St. Thomas's Hospital, and qualified M R.C.S., L.R.C.P in October, 1925

"Records" at Coventry —The annual report of the Coventry and Warwickshire Hospital shows not only a record income—over £10,000—but that the number of patients was greater than ever before. The pressure upon the X ray, electrical, and massage departments was so great that it was found necessary to increase the staff and instal more apparatus. It is hoped that by the end of the present year the money needed for extensions will be forthcoming The report says that a second operating theatre is an imperative necessity The hospital, which contains 241 beds, a number that is now totally inadequate, has been five times enlarged in less than 20 years.

St Andrew's Hospital, Dollis Hill.—The annual report of this Roman Catholic foundation of 52 beds states that whereas in 1913, the year in which it was opened, 540 patients were received, in 1925 the number reached 900 By affiliation with the Royal Free Hospital it is now recognised as a training school for nurses, more accommodation for whom is urgently needed. The hospital is intended for patients who, while not suitable subjects for free reception in charitable institutions, are yet unable to meet the cost of adequate medical or surgical treatment in private nursing homes. Patients are admitted only on the recommendation of their own medical adviser, and in a certain number of beds preference is given to patients of French-speaking countries.

Dr. Jessie Macgregor Prize.—This prize of 60 guineas will be awarded in July next to the woman graduate or qualified woman student of the University of Edinburgh who presents the best record of original work in the science of medicine. Such work may be published *or unpublished but must not have been* published earlier than July 1923. The successful applicant shall within six months following the award, deliver a lecture to the medical profession in Edinburgh on the subject of the work for which the prize has been awarded. Applications marked Dr Jessie Macgregor Prize in Medical Science' must reach the Convener of Trustees, Royal College of Physicians of Edinburgh, not later than June 30th.

The late Dr J B Yelf —Dr John Burnet Yelf, who died at Hemel Hempstead on Feb 28th, was born in 1871 and was the son of the late Dr L. K. Yelf of Moreton in-the-Marsh. He was educated at Epsom and went on to St Mary's Hospital, qualifying M R.C.S and L.R.C.P at the age of 22 After house appointments there Dr Yelf settled at Shipston-on-Stour in Worcestershire where he remained in practice until last year, when failing health enforced his retirement He served in the Royal Army Medical Corps during the war He took a great interest in sport and in local affairs generally, and was also a keen Freemason; his death will be deeply regretted in the district In 1891 Dr Yelf married the daughter of Mr John Barnard of Gloucester, by whom he had one son and two daughters.

Welfare of Edinburgh Children —The report of the Edinburgh public health department for the past month contains a comparison of the condition of children under 5 years of age in 1913-14 and 1923-24 Dirty clothing is less common in the later period; a verminous state of the head is *more frequent among* boys but less frequent among girls—presumably because of shorter hair; really bad nutrition is distinctly rare; the condition of the teeth appears to be worse Heights and weights show little change. Enlargement of lymphatic glands seems less common (perhaps, it is suggested, because the milk-supply has improved); the percentage of children described as having squint has increased; and the number *of vaccinated* children is smaller

Maternity Work at Bristol.—At the annual meeting of Bristol Royal Infirmary it was stated that in consequence of the city's unsatisfactory housing accommodation one out of every six children born in Bristol is dealt with by the hospital, within or without its walls. The *ordinary expenditure last year exceeded the ordinary* income by £8000

The late Mr C E. Pronger.—Mr Charles Ernest Pronger, who died on April 2nd at his home in Harrogate, studied medicine at St Thomas's Hospital, becoming L.R.C.P Lond in 1876 and F R.C.S. Eng in 1891 He was assistant demonstrator of anatomy at St. Thomas's Hospital. For a time he was in general practice in Barnstaple and was attached as surgeon to the Barnstaple and North Devon Infirmary, later becoming consulting surgeon to that institution He settled in Harrogate in 1892 as an ophthalmic surgeon and soon developed a wide consulting practice. For many years he was attached to the Harrogate Infirmary, where he started the eye department, raising the money for its establishment, and he was also ophthalmic surgeon to the Yorkshire Home for Incurables and to the Northern Police Orphanage He made a special study of refractive errors and was one of the first to emphasise the importance of correcting the minor degrees, pointing out that the grosser errors do not cause so much upset to the individual as the lesser ones which produce a constant strain. Mr Pronger did all he could to promulgate this view by monographs and contributions to medical journals and could show excellent results in his own practice. He was an enthusiast in his special work and followed up his cases afterwards. For recreation he was a keen golfer and was at one time captain of the Harrogate Golf Club He leaves a widow, but no family.

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning*

### SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W
Monday, April 12th.—4 30 P.M., War. Annual General Meeting Election of Officers and Council. Major H S. Blackmore R.A.M.C The Pathology of Mustard Gas Burns and its Relation to Problems of Prevention and Treatment
Tuesday —5 P.M., Therapeutics and Pharmacology Annual General Meeting Election of Officers and Council. 8 30 P.M., Psychiatry Dr G W B James Cerebral Arterio-sclerosis.
Thursday.—8 30 P.M., Neurology Dr D McAlpine The Pathology of the Parkinsonian Syndrome in Epidemic Encephalitis.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ANCOATS HOSPITAL POST-GRADUATE LECTURES Quay-street.
Thursday, April 15th.—4 15 P.M., Dr Langley Diabetes in General Practice.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES POST-GRADUATE COURSE.
Thursday, April 15th.—4 30 P.M., Dr Savatard Tumours of the Skin.

MANCHESTER ROYAL INFIRMARY POST GRADUATE COURSE.
Tuesday, April 13th.—4 15 P.M. Mr R J. Rodway Oral Sepsis especially in Regard to the Interpretation of X Ray Films
Friday —4.15 P.M. Dr W Dyson Various Types of Loss of Hair—Permanent and Temporary

# Appointments.

Devine, H, M D Lond, and Bristol has been appointed Medical Superintendent of Holloway Sanatorium Virginia Water
Gilchrist, S. H, M B, Ch.B Liverp, Assistant Medical Officer for Maternity and Child Welfare under Hull Corporation.
Hawkes Sybil M. M.B B.S. Lond., House Surgeon to the New Sussex Hospital for Women and Children, Brighton
Jones, T C L F R.C S Eng, L.R.C.P Lond. Honorary Consulting Surgeon to the Royal Infirmary, Liverpool.
Pirrie, R. R. M.D B.S. Durh., Visiting Medical Officer, Eastbourne Infirmary vice Dr J Adams resigned.
Certifying Surgeons under the Factory and Workshop Acts
Mayhew, E. H, M.D, B Ch Camb (Plymouth); Flory, C H L.R.C P Lond., M.R C.S. (Craven Arms, Salop) Hamder J F, L.R C P Lond., M.R.C.S. (Fordingbridge) Roberts, A. M. M., M.B., B.S Lond. (Caerleon), Shearer, J H M.B., B Ch Glasg (Strathaven) Thomas, W., L.R.C P Lond., M R.C.S (Conway) Christie, G S, M B., Ch.B Aberd. (Wartle, Aberdeen).

# Vacancies.

*For further information refer to the advertisement columns.*

*Alton, Lord Mayor Treloar Cripples' Hospital*—Asst. Res. M.O. £300.

*Bethlem Hospital, Lambeth-road, S.E.*—Res. H.P. £25 per quarter.

*Birkenhead Education Committee.*—Asst. M.O. £600.

*Birmingham General Hospital.*—Res. Surg. O. £180.

*Birmingham, Queen's Hospital.*—Med. Reg. £100.

*Birmingham University.*—Lecturer in Dis. of Ear, Nose and Throat and Lecturer in Orthopædic Surg.

*Blackburn and East Lancashire Royal Infirmary.*—Third H.S. £150.

*Bradford Royal Infirmary.*—H.S. and H.P. Each £150.

*Carshalton, Surrey, Queen Mary's Hospital for Children.*—Asst. Bacteriologist. £600.

*Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.*—Asst. O.P. Registrar.

*Coventry and Warwickshire Hospital, Coventry.*—Res. H.P. £125.

*Darlington Union.*—M.O. and Public Vaccinator. £500.

*Doncaster Royal Infirmary and Dispensary.*—Third H.S. At rate of £150.

*Downs Hospital for Children, Sutton.*—Asst. M.O. £500.

*Dudley, Guest Hospital and Eye Infirmary.*—Asst. H.S. £150.

*Eastbourne, Princess Alice Memorial Hospital.*—Res. H.S. At rate of £175.

*East London Hospital for Children.*—H.P. and Cas. O. Each £125.

*Exminster, Devon Mental Hospital.*—Jun. M.O. £300.

*Fareham, Hants, Knowle Mental Hospital.*—Jun. M.O. £350.

*Hospital for Consumption and Diseases of the Chest, Brompton, S.W.*—H.P. for six months. £50.

*Hull Royal Infirmary.*—Cas. H.S. At rate of £130.

*Ipswich, East Suffolk and Ipswich Hospital.*—Res. M.O. £300.

*Leicestershire County Council.*—Asst. Tuberculosis M.O. £600.

*London Homœopathic Hospital, Great Ormond-street, W.C.*—P. for Dis. of Skin.

*Manchester, Ancoats Hospital.*—Res. Surg. O. £200.

*Metropolitan Hospital, Kingsland-road, E.*—Sen. H.P. and H.S., Jun. H.P. and H.S., and two Cas. O.'s. Each at rate of £100.

*Miller General Hospital for South-East London.*—Asst. in Out-patients' Dept. £150.

*Nottingham, Children's Hospital.*—Res. H.S. At rate of £150.

*Plymouth, Royal Eye Infirmary.*—Hon. P.

*Portsmouth Borough Mental Hospital.*—Med. Supt. £1100.

*Richmond Royal Hospital.*—Asst. H.S. £100.

*Rochester, St. Bartholomew's Hospital.*—Third Res. M.O. At rate of £200.

*Royal Free Hospital, Gray's Inn-road, W.C.*—Gynæcologist.

*Royal Northern Hospital, Holloway, N.*—H.P. and H.S. Each at rate of £70.

*Stoke-on-Trent, City Education Committee.*—School Dentist. £500

*Tonbridge Union Institution, Pembury, near Tunbridge Wells.*—Asst. M.O. £300.

*Truro, Royal Cornwall Infirmary.*—H.S. £170.

*University of London.*—University Chair of Physiology at St. Bartholomew's Hospital Med. Coll. £1000.

*Wells, Somerset, Mental Hospital.*—Asst. M.O. £300.

*York City Mental Hospital, Fulford, York.*—Asst. M.O. £440.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Petworth (Sussex), Swanage (Dorset), and at Upton (Worcester).

# Births, Marriages, and Deaths.

## BIRTHS.

Bates.—On March 30th, at Welbeck-street, the wife of Dr. Kenneth Bates, of St. Albans, of a daughter.

Foley.—On March 30th, at Ebury-street, S.W., the wife of Walter Foley, F.R.C.S., of a daughter.

Wilson.—At Jhelum, India, on March 7th, to Dagmar Curjel Wilson, M.D. Glasg., D.P.H. Camb., wife of W. R. Wilson, Indian Civil Service, a son.

## MARRIAGES.

Stockton—Rowntree.—On March 31st, at the Friends' Meeting House, Hampstead, Edward Latham Stockton, to Alysoun Hurndall Rowntree, M.R.C.S., L.R.C.P.

## DEATHS.

Alston.—On March 28th, at St. Thomas's Hospital, of septicæmia, Ronald Bruce Alston, M.R.C.S., L.R.C.P., aged 22.

Bigg.—On Easter Day, at Morpeth-mansions, S.W., George Sherman Bigg, F.R.C.S. Edin. (late Capt.-Surgeon, R.A.M.C.).

Haworth.—On March 13th, at Salisbury, Rhodesia, as the result of an accident, Wallace E. Haworth, M.B., C.M., B.Sc., Entomologist to the Administration of Southern Rhodesia at Salisbury.

McLuskie.—On Palm Sunday, following an operation, Peter McLuskie, M.B., Ch.B., D.P.M., aged 33 years.

Pronger.—On Good Friday, at Litchdon, Harrogate, Charles Ernest Pronger, F.R.C.S. Eng.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts.

## SOME CURIOSITIES OF CLINICAL MEDICINE.

By C. E. Shelly, M.D. Camb., M.R.C.P. Lond.

### I.

Everyone in the course of medical practice has had experiences where the development of a case or the application of a treatment has had what I may call its curious side. Either some apparently unrelated circumstances fall into the picture or some therapeutic measure has an unusually valuable result, and such experiences are made more useful if it is possible to show that we have in them illustrations of cause and effect along scientific lines. Explanations of the phenomena, as they turn up in the course of practice, are not always possible at the time, but I feel that records should be made because a solution of what was puzzling may afterwards result from observation of similar happenings, while, if they are published, others, with the facts before them, may be able to supply the reasons. "Given a fact, find the explanation of it. But, is it a fact?" said Lauder Brunton.

The word "curiosity" is used in this connexion—not in its more modern sense of something rare, strange, even bizarre, but with more conformity to its original meaning, as indicating some deviation from the normal which arrests attention, calls for "careful" investigation, and demands, if possible, a satisfactory explanation.

### Post-Influenzal Diabetes.

I suppose that few of us, after a patient has apparently completely recovered from an attack of influenza, continue to go on testing his urine.

Some 20 years since a lady who had suffered, not severely, from an attack of influenza rather more than three months previously, sought advice on account of feeling "weak and run down," as she expressed it. Examination showed, inter alia, a urine of high specific gravity, containing an appreciable amount of sugar. She did not complain of thirst, although admitting that she was rather more thirsty than usual—attributing this to the hot weather. There did not appear to be any obvious cause for the glycosuria; but I remembered that the particular epidemic of influenza in which she was a sufferer was generally characterised by rather marked gastro-intestinal symptoms. Neither she nor any of the other cases had, however, developed any trace of glycosuria during the illness, nor during the period of what appeared to be a complete convalescence.

But I made occasion for examining a specimen of the day's urine now being passed by each of the influenza patients who had then passed through my hands. Sugar, in varying amount, was found in nine cases. Five of these were cured, and have remained well ever since. Two—an old gentleman and an old lady, both in feeble health—died within three and nine months respectively. Of the remaining two—who had left the neighbourhood in apparently good health—one died within a year, and the other, after some temporary improvement at the beginning of the third year, of true *diabetes mellitus.*

The inference would seem to be that influenza, especially if of the "gastro-intestinal" type, is apt to be followed by the development of diabetes, although this may not declare itself for several weeks after an apparently complete recovery of the initial malady; and that a full examination of the urine is called for in every such case at intervals, for some weeks at least after all influenzal symptoms have subsided, however well the patient may then seem to be. I have found sugar in the urine of five such patients thus examined; all made a good recovery.

There is, of course, nothing surprising in the pancreas becoming functionally affected in the course of a gastro-intestinal inflammation; either directly owing to its invasion by the specific organism or by the extension of an inflammatory process from the duodenum viâ the pancreatic duct. In none of the fatal cases mentioned was a post-mortem examination obtained.

### Chloroform and the Diphtheria Carrier.

There are few cases more exasperating to all concerned than that provided by the diphtheria carrier.

An instance of this came under my care some years ago. A schoolboy of about 13, who had made a good recovery from a mild attack of diphtheria, and who appeared to be in buoyant good health, but whose swabs from the right nostril continued regularly to furnish evidence of a local, virulent, and persistent culture of K.L. bacilli. No treatment had proved of any service. Schoolmasters, parents, and doctors were all naturally and seriously chagrined;

and the lad himself had long become weary of his enforced ostracism. Fortunately for him it was summer-time and bright summer weather.

One viewed the details of the local infection as representing an inaccessible rocky fastness to which a band of practised marauders had retreated with their flocks and herds, and in which they seemed able to maintain themselves in comfort indefinitely. Their natural fortress was encircled by a zone of gendarmes (active leucocytes), who could make no direct attack and whose activity was limited to maintaining an ineffective siege. For the space between the two opposing forces was a sort of no-man's-land, which none could attempt to cross without certain death. The only method of destroying the marauders seemed to be by the discharge of poison-gas bombs from aeroplanes or airships flying above them.

About this time the value of small doses of chloroform per os as an effective treatment of the typhoid carrier was being vaunted; and it struck me that this might prove no less serviceable in relation to the diphtheria bacillus. I was the more encouraged in this view by recalling the relative action of ether and of chloroform upon much higher forms of vegetable life. If ethyl ether be injected beneath the bark, into the cambium layer, of a fruit tree, for example, the result is a stimulating one; efflorescence is earlier and more profuse, fruit and foliage are more abundant—the whole life of the tree is activated. But if chloroform be used in the same way the result is, as it were, to send the tree to sleep—blossom appears late, small in amount and feeble in vitality; fruitage is poor, alike in amount, size, and quality; the whole tree is enfeebled.

One might reasonably imagine that, in the course of its evolution, the diphtheria bacillus would have had no opportunity of developing a special immunity to chloroform. It was possible that the guardian leucocytes might at the same time be relatively enfeebled, perhaps even destroyed, by the anæsthetic. But this would be of no importance, if only the virulent bacilli were simultaneously extirpated. In any case, the experiment seemed worth a trial and it could do no harm.

The patient had for some weeks previously been using an alkaline disinfectant spray and douche for nose and throat three or four times daily. This was ordered to be continued as before, save that it was to be made up with chloroform water as the excipient in place of distilled water. At the end of five days all local treatment was discontinued for 48 hours, and swabs were then taken from nose and throat. They were reported to contain no K.L.B. or similar organism. At the end of a second and of a third week, the report was the same. After a resumption of the treatment for three days no treatment was given for a week; swabs taken at the end of that period were also negative. No further treatment was given for yet another week; and then, as the report was again negative, the lad was restored to his normal position in society, without anyone being the worse.

I have since had opportunities of treating a few similar cases with equally happy results. And, though such a record can hardly be claimed as settling the matter for good and all, it would seem to justify the use of such treatment in any similar case; and, also, I venture to think, the use of like measures from the beginning of every case of diphtheria, whether its nature be established or only suspected.

How the chloroform acts, whether, like mercuric chloride, it combines with the chitinous envelope of the microbe and so stiffens this as to render any change of form impossible, or whether it asphyxiates the aerobic organism outright, I do not know. In either case, a bacterium which is made absolutely immobile can neither feed nor subdivide, and therefore such a bacterium can neither grow nor propagate its race; it dies—which is the result at which we aim.

### A UNIQUE CASE OF REVACCINATION.

On a certain Tuesday more than 20 years ago a Miss C. wrote to me asking to be revaccinated on the following Thursday. She was at that time running a small crêche in the East End of London and spent several days of each week in actively superintending its management. A small epidemic of small-pox had recently broken out in the neighbourhood and she explained that her mother was extremely anxious that she should be revaccinated.

The daughter regarded this as quite unnecessary; she had undergone revaccination five years previously, without its "taking." She herself was assured that she was still immune, and she very much resented having to keep one of her arms in a sling, debarred from active use, even if only for the three or four days which might be requisite before it could be ascertained whether the revaccination were successful or not. Still, in deference to her mother's entreaties, she had, most reluctantly, consented. She was vaccinated on the Thursday morning with fresh lymph of proved efficiency and was told that a revaccination often followed a course less regular than that of a primary vaccination, and that the usual signs of a reaction might be relatively delayed. She was seen on the morning of the fourth day, when there was not the faintest sign of reaction; and at the end of the full week she wrote to me saying that her arm was still quite free from the slightest irritation of any kind. We therefore concluded that the immunity conferred by earlier vaccinations was probably fully maintained, and she resumed her visits to town.

About a week later she wrote again; the local epidemic was spreading; her mother was still dissatisfied, urging that the operation should be repeated; and the daughter had again acceded to the mother's continued pleadings. Of course, it was all nonsense, she wrote, and quite unnecessary; while admitting that at times she was almost prompted to wish that the second attempt might prove successful, and the whole business be got over for good and all—even at the price of having to put the arm out of commission for ten days or a fortnight. This second attempt was fixed for the morning of what was the sixteenth day after the first.

I found the mother sitting at a work-table, engaged on some embroidery, the daughter standing beside her. All that I needed in the way of hot water, clean towels, and soap, were ready at hand. I asked the daughter to remove her bodice, and while she was doing so made the necessary preparations. As I was about to break off the end of a tube of lymph I stopped; then I looked at Miss C. and caught her glance; then I looked at her bared arm again without speaking. She looked at her arm, turned slightly, so as to hide that shoulder from her mother, and said quietly: "Mother, do you remember my coming into your room this morning?" "Yes," was the reply. "You came into my room after your bath and finished your dressing there. Why do you ask?" "Do you remember what you said to me while I was dressing?" asked Miss C. "Yes. I looked at your arm and said, 'Well, you've got nothing there to show your doctor this morning when he comes.'" "Well then, look now," turning so that her mother could obtain a full view of the left arm and shoulder. The site of the vaccination performed a full sixteen days previously was now occupied by a pustule more than half an inch square (two of the three scarifications had coalesced), presenting an appearance in accordance with the date, a fully-formed pustule, beginning to darken and crust around its margins. Its further development, with ultimate separation of the dried-up pustule from the usual foveate scar, was quite normal.

The only explanation of this unusual sequence of events, the prolonged stage of non-reaction, followed by the sudden appearance of a full-blown pustule, which must have visually developed within not less than three and a half hours at the most, and possibly within a much shorter time, is that furnished by self-suggestion. Miss C. was a very capable, accomplished, and level-headed young woman of about 35, descended from a hard-headed Yorkshire stock, possessing great determination, and without a trace of hysteria or other nervous weakness in her individuality. In the first instance she was most strongly opposed to the suggested vaccination; it was, she thought, unnecessary and certain to be unsuccessful; if it were performed without its "taking" she would be the sooner free to resume the work in which she was so deeply interested; therefore it should not occur. This her subliminal consciousness accepted as a mandate that it must not occur, at least, must not "take"—i.e., give any visible sign of its having taken. And here we perceive an action similar to that of blushing, which reddens such portions of the skin as are visible to others. In this case it was the outward and visible sign of the vaccination's having "taken" that was chiefly in the mind of the patient, since it was on the presence or absence of such obvious evidence that the limitation or the freedom of movement allowed to the limb would actually depend. Therefore, no local evidence made its appearance: it was indefinitely deferred. But as soon as she again changed her mind, in deference to her mother's wishes for a second revaccination, the position became reversed. Her mental attitude was now somewhat like this: "Oh, for heaven's sake, let me have this revaccination done and let it take, if possible, so that the matter may be settled once for all and there may be no excuse for its repetition." Whereupon, the subconscious ban was not only removed, but all her mental energy, both conscious and subconscious, was directed towards achieving a speedy and complete visible evidence of effective inoculation.

There is at least some reason for assuming that the time of the appearance of this external evidence of successful vaccination coincided very closely with that of my inspection of the arm. For one thing, it is unlikely that it could have made its appearance much earlier without attracting the patient's own attention to the part, as by some unusual local irritation caused by friction of the clothing, or the like. And we have abundant evidence founded on numerous instances in which most serious inflammatory lesions of the surface of the body, even actual gangrene of the part, have instantaneously developed in individuals who had been "shocked" by suddenly seeing similar lesions, affecting the same part of the body, in another.

Further consideration of this case suggests some interesting problems :—

1. Was the patient in any degree protected against variola during the period for which the superficial evidence of a successful vaccination was lacking? This can hardly be answered off-hand one way or the other. In the first place we know that the vaccinial fluid is not absorbed by the sound, unbroken skin. No one, so far as I know, has succeeded in producing a vaccine vesicle by rubbing the vaccine of cow-pox into the sound, healthy skin. To effect this the superficial (dead) cells of the epidermal layer must first either be removed by friction, or cut or scratched through, so that the active vaccine may be absorbed by the living cells of the corium beneath; such cells exist in the corium and also, to a relatively small extent, in the deepest layer of the true epidermis.

Now, in Miss C.'s case, the corium was reached at the first revaccination; there was bleeding, though very slight, from each of the three scarifications; and there is evidence that the vaccine subsequently rubbed in was absorbed by it. The slight scarification wounds speedily closed and healed—i.e., the area of inoculated corium became covered by a thin layer of apparently unbroken epithelium, as happens in the case of any ordinary, unpoisoned superficial scratch—hiding from view the activities or potential activities imprisoned beneath that small area. Further, we know that in the course of the following 15 or 16 days the small patch of infected ("vaccinated") corium passed through the usual developments, resulting in its being revealed at the end of that time as a well-developed vaccine pustule bearing an appearance corresponding to its age.

But why did not this pustule show up on the surface of the skin before this date? This delay, I think we must agree, was due to the restraining influence of the "subliminal ban." And I incline to think the ban acted by way of a powerful stimulation upon the energies of the protective phagocytes present in the most superficial layer of the corium and in the deeper part of the epithelium, into which it imperceptibly merges. We must remember that what the patient's mind was now concerned with was the ocular evidence—the outward and visible sign—of a successful vaccination; at the beginning she had laid a ban upon the production of such evidence; whereupon there was "whipped up," as it were, a powerful array of white blood-cells whose number and energy did suffice to prevent the virus finding its way to the surface of the skin. Later on this ban was removed and, with its removal, the local force of defensive leucocytes was disbanded, and there then remained no obstacle to the evidence of vaccinial suppuration promptly reaching the surface.

It is only reasonable to suppose that meanwhile, beginning almost immediately after the performance of the vaccination, the vaccinial virus had been actively modifying the vital qualities of the living tissues in its neighbourhood; the results of such action would be carried throughout the body by blood and lymph streams producing the usual effects. And one can discover no good reason why this action should be any the less effective in immunising the patient against variola, simply because the mere superficial tokens of its activity happen to have been temporarily delayed.

2. What would have occurred if the mother had not pleaded for a second revaccination, and if both she and her daughter had been content with the, apparently, ineffective first revaccination? The patient would have been content with this issue of events. She would cease to worry any more about the subject. Her thoughts, once more diverted into their ordinary channels, would no longer be keeping the subconscious self up to its work; it would consequently relax its efforts, and sooner or later would abandon them altogether. Thus the ban would be removed and the external ocular evidence of successful vaccination, a ripe, matured pustule, would suddenly make its appearance. If this occurred during a dance or a dinner party it would have been a portent as disquieting, not to say alarming, as it would be incomprehensible to the spectators and to the victim. But if this removal or extinction of the ban did not occur until some full three weeks or more after the date of vaccination we should not expect any cutaneous sign. Such a period would cover the whole time required for the full development, maturation, and disappearance of the vaccine pustule, and its last disintegrated remnants would have been removed subcutaneously. The patient would have been noted as "unsuccessfully revaccinated."

I was able, soon after the events just narrated, to carry out some experiments on the psychological aspect of vaccination. Adolescence is a period of rapid metabolism. The public schoolboy on his entrance, at about 13 years of age, is almost invariably susceptible to revaccination, and at the termination of his school career the percentage of successful revaccinations is not less than 98 to 99. Seventeen of such lads presented themselves for revaccination under the Army entrance regulations. Their ages varied from 17 to 18·5 years. They were divided into three groups: A, numbering 5; B, numbering 5; and C, numbering 7. Each group was vaccinated separately. Those in Group A were told that some evidence of the lymph having "taken" would be visible by the second or third day. B were told that such evidence would not appear before the evening of the fifth or on the sixth day. To Group C nothing was said. The same stock of lymph was used for all.

In the members of Group A reaction occurred on the evening of the second day in two cases; during the night or early morning, in three cases. In Group B the results were: evening of the fifth day, two; during the same night, two; morning of sixth day, one. In Group C the first evidence appeared: by evening of third day, one; during the following night, one; on the fourth and fifth days, three and two respectively. On two subsequent occasions, with a total of 11 and 9 respectively, who were separately told to expect results on the second and on the fifth day, the discrepancy was rather more marked. In the larger group (of 11) there was one complete failure—he had been revaccinated two years previously.

The late Sir George Paget believed that every convalescent from typhoid fever was fully susceptible to revaccination, even though he might have undergone a successful vaccination just before his attack of typhoid. I do not know whether other observers have made similar investigations. But the point might be worth bearing in mind in relation to every patient recovering from typhoid.

The sudden eruption of the fully-formed vaccinia pustule, as recorded in the case of Miss C., recalls the story of Gehazi. It would not be unreasonable, and it would not involve less of a "miracle," to imagine that Gehazi might have already contracted leprosy during his service with his master, Elisha, although any definite outward manifestations of the disease had not as yet become apparent; and that, stricken with sudden terror and remorse by the prophet's malediction, completely unmanned and acutely visualising his appalling doom, the external evidences of the malady immediately developed, so that he fled from Elisha's presence "a leper as white as snow."

(*To be continued.*)

## THE SCANDAL OF THE SCALES.

*To the Editor of* The Lancet.

Sir,—A convalescent was recently weighed on four scales in different chemists' shops in Brighton, and during the same half hour. In no two cases was the weight recorded the same. Another was weighed on two scales in different branches of the same cash chemists, whose watchword is, like all other chemists', prescriptive accuracy; the results were again different. To-day, within a quarter of an hour, I have been weighed on the scales of five chemists' shops in Chatham; in every case the recorded weight is different. I enclose the weight certificates which were given to me and which show the variations. During the past two years I have had occasion to be weighed in many towns in the south of England, and everywhere I have found the same inaccuracy. Is it because the chemists themselves receive no payment for the operation—as this is usually given to the local hospital—that the scales are allowed to be everywhere so scandalously out of order? Why do the inspectors of weights and measures omit to test them, especially as the results recorded mean so much to the health and spirits of the patients?

I am, Sir, yours faithfully,

(Rev.) John G. Morton.

St. Andrew's Presbyterian Church, Chatham.

*** The five weight certificates, which all bear the same date, read 13 st. 3 lb., 13 st. 3 lb. 12 oz., 13 st. 4 lb., 13 st. 4 lb. 8 oz., and 13 st. 5 lb., the maximum variation being 1·08 per cent. of the total weight.—Ed. L.

## STANDARDISED ANALYTICAL REAGENTS.

The British Drug Houses have followed the example set by other similar firms in producing in book form[1] the various tests of purity in connexion with their series of analytical reagents. The volume is of the familiar type, and it describes tests on the 88 substances included in every analytical reagent list. The work has been thoroughly undertaken, and the result is a most useful volume. In addition to the information usually contained in such books, the compilers have included methods for the estimation of the majority of the substances. The value of the book is considerably enhanced by a list of reagent solutions and also by a very full index.

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[1] B.D.H. Book of Analytical Reagent Standards. London: British Drug Houses, Ltd. 1926. Pp. 111. 2s. 6d.

# Goulstonian Lectures

ON THE

# DEVELOPMENT OF PSYCHO-PATHOLOGY

AND ITS PLACE IN MEDICINE.

*Delivered at the Royal College of Physicians of London on March 11th, 16th, and 18th, 1926,*

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PHYSICIAN IN PSYCHOLOGICAL MEDICINE, UNIVERSITY COLLEGE HOSPITAL.

## LECTURE III.*

In the preceding lecture the basic conceptions underlying Freud's theories were briefly considered, and the conclusion reached that their scientific validity could only be determined by an examination of the observed facts upon which they are based. An attempt must be made here to indicate the lines along which such an examination should be directed, but before passing on to this task it will be advisable to trace Freud's sex theories through a further stage in their development, as a better understanding of the part assigned to sex and libido in the modern Freudian system will thereby be attained. This further stage is characterised by the incorporation of the conception of "narcissism," and its history lies along two lines of research, the investigation of dementia præcox and of the psychoneuroses of the war.

### The Conception of Narcissism.

The psycho-analytic investigation of dementia præcox had been to some extent foreshadowed by Freud, but the first systematic study along these lines was due to Jung, who in 1907 published his well-known "Psychologie der Dementia Præcox." He showed that many of the symptoms of dementia præcox closely resembled those met with in hysteria and were explicable by almost identical mechanisms, yet they differed from the latter in their fixity and immutability. This characteristic inaccessibility was further investigated in the light of Freud's libido theory, and was seen to be associated with an absolute incapacity for "transference," that is to say, the peculiar affective relationship between physician and patient upon which all therapy was conceived to depend. As a result of subsequent work conceptions were devised by which the inaccessibility of the dementia præcox patient was brought definitely into relation with the libido theory, and the theory itself considerably modified and extended. It was held that the earlier stages of sex development included a phase in which the libido was directed on to the individuals own "ego." This phase, in which the ego might be said to constitute the "object" of the libido, preceded the phases in which an object was sought in the outer world, and to its manifestations the name of "narcissism" was given. Dementia præcox could then be conceived as involving a regression to the narcissistic stage of sex development, just as the psychoneuroses were regarded as involving regressions to other and later stages of that development. In this way the familiar features of dementia præcox, its curious shut-in character, its divorce from reality, the inaccessibility of the patient, and his tendency to live in a phantasy of his own making, could be explained as direct results of the attachment of the libido to the ego, and its consequent imperviousness to the claims of the external world. And in this way also dementia præcox could be subsumed under that interplay of the libido and the ego which has come to be more and more the central point of the Freudian theories.

During the recent war a great mass of illness occurred which, christened at first by the misleading name of "shell shock," came ultimately to be known as the psychoneuroses of war. This change of nomenclature was due to the rapidly won recognition of the psychological origin of these conditions. Indeed, it may be said that, whatever else the war has done, it has at least conclusively demonstrated the existence and importance of psychogenic disorder. It was observed that the psychoneuroses of war, although naturally coloured in their symptomatology by the peculiar circumstances of their origin, did not differ in essentials from the psychoneuroses already familiar in civil life. Moreover, investigators noted that the mechanisms which Freud claimed to be responsible for psychoneurotic symptoms were remarkably applicable to the war conditions, and that they were in fact much more obvious and easily demonstrated in the latter, doubtless because of their relatively rapid development and simple character. There seemed to be no doubt that an intrapsychic conflict was at the bottom of the war psychoneuroses, and one which produced its effects according to laws identical with those already described by Freud. Yet the conflicting forces had apparently no relation to sex, but were manifestly concerned with instincts of a totally different character, in particular those ministering to self-preservation. The general effect of these observations was to confirm in a high degree Freud's conceptions of mechanisms, while they threw grave doubt upon his generalisation that psychoneuroses invariably involved the sex instincts and were the result of fixations and regressions in the action of the libido. The Freudian school, however, endeavoured to save the position by an application of their new conception of narcissism. The part apparently played in the war psychoneuroses by the instincts of self-preservation was reduced to a manifestation of narcissism, and thus the conflicts which overtly had no relation to sex were brought within the general theory of the libido and its development.

Freud has always insisted, even in his earliest work, that he was attaching to sex a wider significance than that with which it was generally credited. It is clear, however, that in the developments we have just considered, its application has been extended to a far more comprehensive sphere than was contemplated in the original theories. These developments are, indeed, a particular instance of an evolution which characterises the whole of the later growth of the psycho-analytical doctrines. The libido theory has been pushed into further and further fields, and the manifestations of the libido are now held to include not merely normal sex activity, perverted sex activity, and the psychoneuroses, but a vast mass of human thought and behaviour. Freud's early generalisation that no neuroses can be present with a normal sexual life has been submerged in an immensely wider generalisation which, though not explicitly stated, might be said to run, "Without processes having their origin in sexual life the greater part of human activity would cease to exist." As psycho-analytical investigation proceeds, more and more of the behaviour of man is brought under the general conception of the interplay of libido and ego, and it is perhaps not unreasonable to assume that the aim in view is to bring the whole of such behaviour under it. In other words, Freud's theories have moved far beyond the department of medicine in which they had their origin. The position now is that the permutations of the libido account for a great number of the phenomena of life, and certain permutations account for some of the phenomena of disease.

We may pause to examine this wide conception, and to consider whether it is inherently possible or justifiable. To begin with it may be noted that, although the attempt to subsume so much of human activity under a single principle naturally arouses immediate criticism, it is not in itself absurd, and is indeed supported by certain general considerations. Drever has remarked that "though perceptual experience is more and more overlaid by the higher mental processes, it always underlies them, and, though control of primitive impulse becomes more and more complex, it is always a control by that which draws its controlling force, ultimately and fundamentally, from primitive impulses, never a control *ab extra*."[1] Pursuing this line of thought it may be said that, if we are to dissect mental processes into constituent parts, and to trace back the driving forces to their elements, the latter must presumably consist of something like the primitive instincts. Similarly, if we accept an evolutionary standpoint, we must build up man's activities from elements to be observed in lower animals, and sex and self-preservation would constitute the chief founts from which energy could ultimately be derived. It is not therefore impossible, or even improbable, that a conception will finally be achieved in which the manifold activities of man are reduced to primitive forces, and shown to be the result of permutations and combinations amongst those forces. These considerations serve to show that Freud's attempt is at any rate legitimately conceived, but whether it is a successful attempt is, of course, another matter. We may conclude that here, as in the case of the other conceptions we have examined, a priori objections have no weight, and that the whole structure of Freud's work can only be appraised by a careful examination of the facts upon which it is based, and a determination of the extent to which the concepts proposed can be confirmed and verified by those facts.

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* Lectures I. and II. appeared in The Lancet of March 20th and April 3rd respectively.

The application of criticism along such lines is made easier by the circumstance that these are precisely the criteria by which Freud himself is prepared to abide. He has pointed out that "psycho-analytical investigation could not, like a philosophical system, make its appearance with a complete and ready system of doctrine, but had to build up step by step the way to the understanding of psychical complications by the analytic dissection of normal and abnormal phenomena."[2] In other words, the claim is made that psycho-analytical theory is a direct induction from observed facts, and must stand or fall with the accuracy of the facts and the validity of the induction. Such a claim is a legitimate appeal to the bar of science, and justifiable criticism can only concern itself with two questions: (1) are the facts as stated? (2) are the concepts built up thereon valid?

The first question leads us to the kernel of the matter at issue, and discloses at once the strength and the weakness of the psycho-analytic position. The contention is put forward that anyone who will investigate a case by Freud's method will find that *the facts observed are as Freud states them to be*, and it might appear that if this contention could be established the foundations of psycho-analytical theory would be placed beyond dispute. Now there is undoubtedly considerable evidence in support of this statement, though not perhaps that overwhelming evidence which would serve completely to justify it. It may be accepted that the great majority of those who have examined cases by Freud's method have confirmed his observed facts, and this applies even to observers such as Jung, who have drawn from those facts conclusions very different from those of Freud. Yet this acceptance has by no means that complete confirmatory significance which it at first sight appears to carry. We note that the facts are observed by the aid of a particular method, and until we have carefully examined the nature of this method and its reliability as a weapon of investigation, the value of the facts ascertained by its use cannot be satisfactorily determined, even if it could be shown that all the users of this method have *observed identical phenomena*.

### THE METHOD OF PSYCHO-ANALYSIS.

The method whereby the facts, upon which Freud relies for the building of his theories, are elicited, is the method of psycho-analysis. The patient talks freely about any subject which occurs to him, avoiding so far as possible any deliberate attempt to control or direct the flow of his associations. It is held that these associations are largely conditioned by forces of which the patient is unconscious, and the physician, from his knowledge of mental mechanisms, is enabled to deduce from the material provided by the patient, and the manner of its presentation, the nature and mode of action of the factors responsible for it. These conclusions are utilised by the physician to point out to the patient the significance of certain of his thoughts, to direct his attention to others, and so to push the investigation until the unconscious factors are fully brought into the light of consciousness. Freud has himself described the process in these words: "The patient talks, tells of his past experiences and present impressions, complains, and expresses his wishes and his emotions. The physician listens, attempts to direct the patient's thought processes, reminds him, forces his attention in certain directions, gives him explanations and observes the reactions of understanding or denial thus evoked."[3] Later, on the same page, he remarks that the patient "will make the communications necessary to the analysis only under the conditions of a special affective relationship to the physician," the so-called "transference."

### OBJECTIONS TO THE RELIABILITY OF PSYCHO-ANALYSIS.

Now this is admittedly the method by which the facts of psycho-analysis are obtained, and an examination of its character seems to call for a considerable modification of the claim that psycho-analytical theory is based upon facts of observation. It is true that the theory is based on "facts," but these facts are not obtained by simple observation; they are reached by the employment of the method of psycho-analysis. This method intervenes, as it were, between the actual facts of observation and the prepared facts upon which the concepts are based, and it is of such a nature that the possibility of distortion cannot with certainty be excluded.

It has become a commonplace of psychology that the direction of thought, and its content, are influenced in a remarkable manner by factors of an affective order, and it is clear that such influences are at least possible in the method of psycho-analysis. Before we can be satisfied that the communications of the patient, which constitute the facts of observation of psycho-analysis, are of the kind to which the term "fact of observation" is customarily applied in other branches of science, we must be satisfied either that they are not distorted by the method of investigation employed, or that the degree and direction of the distortion can be accurately estimated. An attempt to apply this test to psycho-analytical research will be rendered easier by a preliminary review of the knowledge we possess concerning the potential sources of such distortion.

The problem of the value of human evidence—that is to say, the objective accuracy to be credited to communications made by one person to another concerning matters of fact—aroused considerable interest amongst psychologists in the earlier years of the present century. It had been previously noted by historians that the old standard whereby the moral character of a witness was taken as the sole test of his reliability, and his statements held to be accurate if his honesty was established, was inadequate and misleading. It was apparent that, quite apart from his honesty, his statements might be perverted by all kinds of factors of whose action he was completely unconscious. Binet, in 1900, called attention to "the advantage that would accrue from the creation of a practical science of testimony,"[4] and the suggestion was enthusiastically taken up by Stern,[5] of Breslau, who with his fellow-workers carried out an immense amount of painstaking research. Extensive experiments were devised, consisting essentially in the submitting of a predetermined experience to a number of subjects, and subsequently obtaining from them an account of what they had observed. The results were remarkable, and showed conclusively that a witness's report of his experience, even when given with the utmost honesty and conscientiousness, is rarely completely correct, and that a proportion of the details, including even those of whose truth the witness is absolutely certain, are erroneous. Thus in Borst's experiments only 75 per cent. of the items of which the witness was certain were in fact accurate.[6] If, instead of being asked simply to narrate what he had observed, the witness were interrogated with regard to details, accuracy was greatly diminished, though the range of facts apparently remembered was increased. This result is presumably to be attributed to the suggestive influence of the questions asked.

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[1] Drever: Instinct in Man, second edition, 1921, p. 151.

[2] Freud: Das Ich und das Es, 1923, p. 42. ". . . dass die psychoanalytische Forschung nicht wie ein philosophisches System mit einem vollständigen und fertigen Lehrgebäude auftreten konnte, sondern sich den Weg zum Verständnis der seelischen Komplikationen schrittweise durch die analytische Zergliederung normaler wie abnormer Phänomene bahnen musste."

[3] Freud: Introductory Lectures on Psycho-analysis, English translation, 1922, p. 13.

The mechanisms responsible for these perversions of memory were studied by observers who noted the influence of preconceptions, suggestion, and various other factors. Investigations of definitely pathological phenomena showed that extraordinary memory distortions may occur, such as the confabulations of the hysteric and the alcoholic, and the remarkable production of false reminiscences in the condition known as "pseudologia phantastica." Here the action of suggestion and other emotional forces was clearly demonstrable, and it was not difficult to show that the factors producing these exaggerated pathological effects were also active, though in a lesser degree, within the limits of the normal, and certainly capable of causing marked perversions. The conclusion to which all these various observations lead is that memory is an instrument whose reliability can be grossly disturbed by a multitude of factors, that no certain line between actual reminiscence and phantasy can be drawn except by some measure of objective verification, and that in the absence of such means a patient's statements concerning events of his past life *can only be accepted* with considerable reserve.

Freud is, of course, well acquainted with the facts we have enumerated, and with the potential capacity for distortion inherent in human memory. He was, indeed, one of the first to appreciate clearly the difficulty of distinguishing between phantasies and genuine reminiscences, and it was this recognition that led him to abandon his original theory that the psychoneuroses were the result of psychic *traumata*. He discovered that in many cases the traumatic event, which was apparently responsible for the subsequent disorder, had in fact never taken place, and was merely a phantasy constructed by the patient's mind. In such cases the clinical picture was nevertheless essentially identical with that observed where the "traumatic" event could be objectively verified, and the conclusion was therefore inevitable that the specific causal factors could not lie in the event, but in the mentality of the patient. Freud held that under these circumstances the objective validity of the memories produced by the patient was of relatively minor importance; he was concerned with the detection of intrapsychic forces, and for this purpose phantasies provided a material even more useful than genuine memories. Similarly, in the case of dreams, whether a patient actually dreamt a dream as he related it, or unwittingly elaborated it *on waking into* an appreciably different structure, mattered but little to the work of interpretation, because in both cases the same forces were at work, and it was the discovery of those forces which constituted the problem at issue. This contention is applicable to the material produced during a psycho-analysis, and goes some way towards meeting the objections we have cited concerning the validity of that material. It is, indeed, a sound contention so far as the distorting forces arising within the patient's own mind are concerned. These would influence the flow of thought, but would by this very circumstance provide the necessary ground for their detection, and we should have no reason to deny to the flow of thought the title of "fact of observation," although the patient might be relating phantasies rather than actual memories. It is quite another matter, however, when the flow of thought is not influenced by purely intrapsychic factors, but by the intervention of the psycho-analyst. Under these circumstances the "memories" produced may be conditioned to a very significant extent by factors which lie entirely outside the patient, and the question of their value as indicators of the trends existing in the patient's mind assumes an altogether different aspect.

Moreover, the problem at issue is not merely concerned with memory. The whole direction and content of the patient's psychic processes are alterable by factors of the same kind as those observed in the case of memory. A lengthy investigation of a patient's mind means that one is no longer examining at the end of the investigation the object which one set out to observe, but an object which has progressively altered during the course of the investigation, and altered in a way which may have been largely determined by the investigation itself. This was the circumstance which vitiated absolutely and completely the painstaking conclusions drawn by Charcot and his school from the phenomena observed in the trained hysterics of the Salpêtrière. A perusal of the literature of double personality suggests strongly the existence of a similar vitiating factor, and in a case of this kind which I was personally able to investigate I had no difficulty in satisfying myself that much of the symptomatology observed was a direct result of the process of investigation employed.[7] It is not easy to avoid the conclusion that the method of psycho-analysis contains potential sources of distortion at least as great as those in the instances just mentioned. The preconceptions of the analyst, the particular moments at which he sees fit to intervene in the patient's narrative, the emphasis which he directs to certain features of the narrative, the point at which he deems a flow of associations to have reached a significant element, all these are abundantly able to produce decided alterations in the subsequent *functioning of the patient's* mind. It must be remembered, moreover, that psycho-analysis is a lengthy process, and that very small changes of direction in a long course may lead ultimately to a wide divergence. When the majority of the changes of direction tend to be in the same sense, as they are likely to be in investigations conducted by analysts trained in a particular system of beliefs and technique, then it is not surprising that the final pictures attained bear a close similarity. It *may be noted* in this connexion that, while the pupils of Freud confirm by their clinical observations the findings of their master, the pupils of Jung, working with weapons forged of much the same material and in a closely similar pattern, have no difficulty in finding ample clinical confirmation for the quite disparate tenets of Jung.

These objections to the reliability of psycho-analysis as a means of investigation are *of a grave* character, and make it impossible to accept the contention that Freud's theories are based on facts of observation if the term "fact of observation" is given the significance which it possesses in other branches of science. Moreover, if the facts of observation are not beyond question, the conceptions and theories built upon them cannot be solidly constructed according to the canons of scientific method, and it is not possible to stamp them with the hall-mark of science unless and until the means by which they have been obtained has been shown to be trustworthy. The claim has been put forward that an inquirer can convince himself of the validity of the method of psycho-analysis by the process of having himself analysed, but clearly this claim can have no weight when the problem at issue is the determination of the reliability of the method itself. The attainment of an inner conviction is a phenomenon belonging to the sphere of religion, and without relevance to science; its existence may attest the spiritual or æsthetic value of its object, but not its right to be incorporated into scientific knowledge. The latter right can only be gained by rigid objective verification and demonstration, and not in the least by subjective convictions.[8]

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[4] Binet: La Suggestibilité, 1900.

[5] The contributions of Stern and his school are mainly contained in the two volumes of the Beitr. z. Psychol. d. Aussage, Leipzig, 1903–1906. Cf. also the author's paper, The Psychology of Rumour, Proc. of the Roy. Soc. of Med., 1918.

[6] Borst: Recherches expérimentales sur l'éducabilité et la fidélité du témoignage, Arch. de Psychol., Genève, 1904.

[7] Bernard Hart: A Case of Double Personality, Jour. of Mental Science, 1912.

The claim that a person desiring to practise psycho-analysis must himself first be analysed in order to acquire the necessary technique is, of course, on an altogether different footing, and seems to be perfectly legitimate. It is perhaps also legitimate to require that the intending practitioner should undergo personal analysis to the end that he shall overcome his own "resistances," which would otherwise distort his judgment of the patient's mental processes. Clearly, however, this requirement can only be defended as a means of improving technique in a method already established, and it can contribute nothing to the demonstration of the validity of psycho-analytic method itself. On the contrary, the existence of such a claim inevitably strengthens the criticism which asserts that the trained preconceptions of the analyst play a part in fashioning the material produced by the patient. This criticism receives a further justification when we note that the followers of Jung, whose theories differ fundamentally from those of Freud, make a similar claim that the practitioner of their method must undergo a personal analysis, of course by a member of Jung's school, before he attempts to deal with the problems of his patient.[9]

In spite of the importance and weight of these various objections there are two points to be brought forward which serve to weaken their force. The first point is that psycho-analysis has a long history behind it, and many of its earlier discoveries were made by a process much less open to criticism than the method we have described in words quoted from one of Freud's later works. In these instances the intervention of the analyst was reduced to a minimum, and the "facts of observation" approximated much more nearly to the standard which science demands. A number of the more elementary Freudian conceptions and theories are solidly built upon facts of this character; they have attained a wide acceptance, and it is not unreasonable to regard them as established contributions to our knowledge. Moreover, it is necessary to emphasise that these comparatively elementary conceptions are nevertheless of the first importance, and have cast more light on the problem of nervous disorder than the work of any other psychopathologist, whatever the verdict history may ultimately pass upon the later theories and practice of Freud. In view of these circumstances psycho-analysts might naturally claim that the elementary and earlier conceptions are the groundwork upon which their later methods are constructed, and that if the former are valid, so also are these later methods. It is, nevertheless, difficult to accept this contention, because, although the margin of potential error in the elementary conceptions is relatively small, it becomes greater and greater the more an imperfect method is employed, unless it is possible to obtain objective verification by a frequent resort to the plane of phenomenal fact. This constant testing by an appeal to objective facts is a sine qua non in the development of any scientific theory, and we have seen that it is just this test which is lacking in the growth of psycho-analytical theory, because objective facts will not serve its purpose, but only those facts after they have been prepared by the method of psycho-analysis.

These considerations lead us on to the second point which serves to weaken the objections cited to the method of psycho-analysis. It is true that the facts are not of the order to which the facts of observation of other sciences belong, but this character appertains in some degree to all the facts of psychology. Except for the facts of introspection all other psychological facts are inferences. The only direct observation possible is observation of behaviour, of action, or of speech; in order to deal with these facts by the psychological method it is necessary to go behind them to the underlying subjective experience, which cannot be directly observed, but only inferred from the behaviour facts. In this way a new series of "facts" is obtained upon which the psychological concepts are ultimately constructed. This peculiarity of the method of psychology has been emphasised by Drever, who regards it as an inherent weakness, and one which dooms psychology to occupy always an invidious position in the scientific hierarchy, so that explanation of a particular series of phenomena by the concepts of another branch of science will always be accepted in preference to a psychological explanation, if both are available.[10]

Moreover, although the facts of introspection are observed with a directness and intimacy greater than that attaching to the facts of any other science, yet they are by their intrinsic character incapable of objective verification, and we already know that they are subject to numberless sources of error unless they are made in a sphere in which emotional and other distorting factors are unlikely to play a part. It is objective verification which science insistently demands, and owing to the nature of its material psychology can only give an inadequate response to that demand. The objection on this score which has been taken to the method of psycho-analysis is therefore applicable to the whole sphere of psychological research. Nevertheless, there are degrees of deviation from the strict canon of scientific method. It may be true that every psychological conception rests upon facts which are separated from actual facts of observation by some measure of inference, but in many such conceptions that measure of inference is very small. In Janet's conception of dissociation, for example, the degree of inference is so slight that it may safely be neglected, and a similar statement is perhaps applicable to the more elementary Freudian conceptions, but in the elaborate later theories the actual facts of observation become more and more remote, and the degree of inference swells by progressive accretions until a satisfactory objective verification is no longer possible.

We are, therefore, compelled to regard the method of psycho-analysis as an imperfect weapon of investigation, and one capable of seriously distorting the facts which it elicits. Those facts, and a fortiori the conceptions built upon those facts, must hence be accepted only with reserve unless other sources of confirmation are available lying altogether outside the evidence furnished by the employment of the method itself. A number of such external sources of confirmation have been put forward, and these now call for some consideration.

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[8] Freud has himself considered the criticism that the admitted influence of the physician upon the patient casts doubt on the objective validity of the findings of psycho-analysis, in his Introductory Lectures on Psycho-analysis, English translation, 1922, p. 378. He holds that this criticism is more satisfactorily refuted by the evidence of experience than by the aid of theory, and that "Anyone who has himself conducted psycho-analyses has been able to convince himself numberless times that it is impossible to suggest things to a patient in this way." This would seem, however, to be a further resort to the "inner convictions" produced in the analyst as a ground for accepting the validity of his beliefs. It is, of course, possible to contend that in the sphere of psycho-analysis strictly objective verification is impracticable, and that a subjective verification is all that can be obtained, but such a contention would imply a decisive abandonment of the claim that psycho-analytic investigation satisfies the standards demanded by science. Freud's further arguments, relating to the verification afforded by therapeutics and the study of the insane, will be considered later.

[9] H. G. Baynes, in his preface to Jung's Psychological Types English translation, 1923, p. 19.

[10] Drever: Instinct in Man, second edition, 1921, p. 4.

### THERAPEUTIC RESULTS OF PSYCHO-ANALYSIS.

The first confirmation proposed is that derived from the therapeutic results. Many of those who practise psycho-analysis formerly employed other methods such as suggestion and persuasion, and they maintain that the cures now achieved are much more extensive and permanent. The conclusion is drawn that, if a case treated by psycho-analysis recovers, this circumstance affords proof of the accuracy and adequacy of the method used. Unfortunately, this argument has but little weight. In the history of medicine many structures have been built upon the fallacy of post hoc ergo propter hoc, and an appreciation of its significance and potency would no doubt shake other departments of medicine than that with which we are here concerned. In this department, however, its incidence and effects are peculiarly disconcerting and difficult to appraise. It is, of course, true that satisfactory results are achieved by psycho-analysis, but it is equally true that satisfactory results are achieved by many, indeed by all, other methods of psychotherapy, and by a multitude of methods which lie altogether outside the walls of orthodox medicine. Moreover, if it be conceded that the cure is a direct result of the treatment, there remains considerable doubt as to the precise factors to which this result is to be ascribed, and it is possible that these do not belong to the essential structure of the method employed, but are merely vicariously associated therewith. For example, it is extremely difficult to delimit the results produced by faith and suggestion, and unless the activity of factors of these kinds can be accurately estimated, no certain conclusions can be drawn as to the efficacy of therapeutic methods into which such factors may enter.[11]

The Freudian school does not deny that a factor of the order of suggestion enters into psycho-analysis; on the contrary, its existence is an essential part of their tenets. This factor is the peculiar affective relationship which develops between the patient and the physician, and upon it the "transference" processes, which are conceived to be a necessary part of the therapeutic action, are dependent. Freud expresses this affective relationship in terms of his libido theory, and believes it to derive its driving power from the psychosexual forces existing in the patient. He regards all forms of psychotherapy as involving this relationship, including those grouped under suggestion. He holds, indeed, that "A human being is . . . on the whole only accessible to influence, even on the intellectual side, in so far as he is capable of investing objects with libido,"[12] and that this capacity distinguishes the psychoneuroses which can be treated from those conditions, such as dementia præcox, in which therapy is impotent because libidinous occupation with an object, and hence the necessary affective relationship to the physician, cannot develop.

It is admitted, therefore, that an affective relationship, essentially identical with that underlying suggestive therapy, necessarily occurs in the course of psycho-analysis, and is indeed an integral constituent of the curative process. The psycho-analytical school maintains, however, that this affective relationship is not allowed to dominate the whole course of the treatment, as it is in the case of suggestive therapy, but that at a certain stage it is itself submitted to analytic dissection and finally dissolved. If this contention be correct it is clear that the accurate estimation of the results to be ascribed to suggestion, which we postulated as a necessary pre-requisite before conclusions as to the therapeutic efficacy of psycho-analysis could be drawn, would immediately become possible. This contention is based, however, upon facts observed by the employment of the method of psycho-analysis, and its validity is entirely dependent upon the validity of this method. It can play no part, therefore, in a discussion in which the validity of the psycho-analytic method is itself the problem at issue, unless we are to be guilty of argument in a circle.

We must hence conclude that the argument from therapeutic results cannot provide the independent confirmation of psycho-analytic validity of which we are in search. It may be remarked here, however, that the opposing argument, which seeks to disprove psycho-analytic doctrine by the enumeration of alleged failures or harmful results, has still less weight. Quite apart from the inadequate and obviously biased character of much of the evidence put forward, it is clear that here again the fallacy of post hoc ergo propter hoc is once more playing a potent part. To ascribe an unfortunate sequel to the method of treatment employed rather than to the disease itself assumes an exact knowledge of the nature and interaction of the complex factors involved which we are very far from possessing, and such a conclusion cannot be justified until that knowledge is attained. Moreover, even if it could be demonstrated that the sequel was the direct result of the method, this would but bear witness to the potency of the method, and it has frequently been pointed out that a remedy which is incapable of doing harm is hardly likely to be capable of doing good.

### THE BEARING OF MYTHS AND FOLK-LORE ON PSYCHO-ANALYSIS.

The second sphere in which it is alleged that confirmation of the findings of psycho-analysis can be obtained is the study of myths and folk-lore. It is maintained that there are to be found here human creations clearly exemplifying the processes which have been elicited in the individual by the method of psycho-analysis. A prodigious amount of research has been carried out in these fields by Freud's adherents, and the conclusions reached have been generally in accord with the principles of psycho-analysis. It is difficult to estimate the precise validity of these conclusions, because the actual objective facts observed in the research are admixed with a multitude of inferred facts of the kind peculiar to the psycho-analytic method, and anthropologists of other schools are by no means in agreement as to the deductions which may properly be drawn. We may admit, however, that the objective facts in this sphere do provide formidable arguments in favour of at any rate some of the findings of psycho-analysis.

### INSANITY AND PSYCHO-ANALYSIS.

The third sphere in which confirmation of psycho-analytic doctrine is to be found is that of insanity. The evidence here is, perhaps, more convincing than in any other field, because phenomena can be observed in the speech and actions of the insane which are entirely conformable to the principles deduced by the psycho-analytic method, and in which any influencing of the patient by the physician is excluded by the nature of the case. MacCurdy has emphasised the strength of this evidence in a passage which at the same time acknowledges the inherent weakness of the psycho-analytic method, and this passage deserves quotation. "Everyone knows that preconceptions determine observations very largely in all scientific work. We see what we are on the look out for, and are blind to the unexpected. In psycho-analysis, however, this danger is augmented by the plasticity of the material which is largely produced in accordance with the theory of the analyst. With this condition of affairs it seems extraordinary that Freud should, during the years when he was making his discoveries, have kept his eyes so vigilantly open for new factors and now unconscious phenomena, and that his general conclusions as to the content of the unconscious should be so accurately confirmed by examination of the insane who do not talk or dream to order."[13]

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[11] T. A. Ross, in his book The Common Neuroses, 1923, p. 7 ff, describes the various methods of treatment he has successively employed during his career as a psychotherapist, and points out that with each he obtained good results so long as, and only so long as, he himself believed in its accuracy and value.

[12] Freud: Introductory Lectures on Psycho-analysis, English translation, 1922, p. 373.

### GENERAL CRITICISM OF THE FREUDIAN THEORIES.

We may now endeavour to summarise our review of the Freudian theories. The criticism which has been levelled at the conception of the unconscious and other of Freud's basic assumptions on the ground that these are impossible entities is due to a misapprehension of the nature of science and of the psychological method of approach. The validity of these conceptions, as in the case of all scientific conceptions, can only be determined by an appraisement or recapitulation of the objective facts and the testing of the theories in the light of these facts. The real weakness of the Freudian theories depends upon the imperfections of the method of psycho-analysis as a weapon of investigation, whereby the conceptions rest on inferred facts rather than on actual objective facts. This weakness is inherent in some degree in all psychological research, but it is graver here, because the deviation from observed facts to inferred facts is exceptionally great, and introduces numerous potentialities of distortion. Moreover, these potentialities are much increased by the circumstance that the method of psycho-analysis may, owing to its peculiar nature, continuously alter the objective facts during the course of the analysis. Nevertheless, many of the simpler conceptions are based on inductions in which both the measure of inference and the possibility of distortion by the method of investigation are both comparatively small. Further, there are sources of confirmation outside the method of psycho-analysis which, at any rate, give some support to the conceptions. We may draw the final conclusion that, although the theories of Freud do not attain the standard demanded by the canons of science, some of his conceptions approximate very nearly to that standard, and perhaps as nearly as any psychological conception can approach. A consideration of the immense advantage to be gained from the introduction of a conceptual psychology as opposed to a mere description of mental processes, together with a due appreciation of the almost insuperable difficulty of obtaining satisfactory objective verification in this sphere, suggest that some deviation from the strict *path of scientific induction must necessarily be allowed*, if we are not to abandon all hope of progress. The danger of such deviation must always be borne in mind, however, and it must not be forgotten that subjective feelings of certainty in the followers of Freud are no substitute for the objective verifications which science must insistently demand. The solidity of the foundations is vastly more important than meticulous additions to the upper stories, and we may reasonably ask for every possible means of investigation to be directed to the method of psycho-analysis in itself, with a view to establishing its validity, and eliminating or controlling the sources of error which seem to be inherent in it.

The later publications of Freud culminating in "Das Ich und das Es," published in 1923, have not been considered. The keynotes of this later work may, perhaps, be said to be an alteration in the direction of inquiry from the libido to the ego, an attempt to analyse and define the properties of the latter, and various speculations concerning the fundamental forces of the mind. None of this work could be made intelligible without entering into a degree of detail quite impossible here. For our present purpose it will suffice to note that the investigations do not essentially alter the earlier findings, but *superimpose additional* stories upon the older building, so that their validity is necessarily dependent upon that of the underlying structure. A further ground for criticism, however, may be mentioned. The later work of the Freudian school with its minute dissection of the libido and the ego into constituent parts, which combine and interact in various ways, introduces a mass of conceptual entities which approximate in their form to those of chemistry and physics.[14] Now, it cannot be questioned that conceptual entities of this type can be legitimately employed if a stringent relationship to observed fact is rigidly maintained, but when they are reached by the extensive use of a spatial and mechanical metaphor, which can only be applied in the sphere of psychology by the exercise of some ingenuity and force, it is necessary to bear in mind the dangers which beset the road. The construction of such conceptions may, no doubt, indicate that psychology and psychopathology are attaining the precision and exactness of the mechanistic sciences, but it must be admitted that the philosophy of Pythagoras produced concepts which also appear to be precise and exact, and we need to be very sure in which of these fundamentally different directions we are travelling. The essential criterion lies in the relationship to the plane of observed facts. The concepts of mechanistic science are verifiable by a constant dipping to the level of experience and experiment; the speculations of Pythagoras can be submitted to no such test. The psycho-analytic school, of course, claim that this criterion is applicable to their work, and that the conceptions they put forward are legitimately built upon clinical observation. We are, therefore, led back again to the problem of the validity of the method by which these observations are made, and to the cardinal necessity of establishing that method, before we can feel any security in the many-storied structures which are now being built by their aid.

### THE SCHOOLS OF ADLER AND JUNG.

The genius of Freud has produced a profound effect upon the development of psychopathology. In addition to the orthodox school of psycho-analysis, which follows more or less rigidly the path sanctioned by its founder, a multitude of other investigators have been materially influenced by Freud's conceptions. Many of these investigators are prepared to travel a certain distance with Freud, although they refuse to accept his views in their totality. Others incorporate individual psycho-analytic conceptions in theories mainly built on other lines, as we have seen to be the case with certain persuasionist and suggestionist practitioners of the present day. None of these writers call for individual mention here, as they do not add anything essentially new to the principles we have already discussed, but merely adopt an eclectic attitude with regard to them. Two schools of thought, however, must be specifically considered, because, although they were both founded by men who were originally followers of Freud, they have now radically diverged from the orthodox path of psycho-analysis. These are the schools of Adler and of Jung.

Adler's views bear a broad general resemblance to the earlier Freudian theories from which they emerged, except that he finds the *driving forces* responsible for the neuroses and other mental phenomena not in the sphere of sex, but in the will to power.[15] The precise character of these conceptions cannot be discussed here, but it may be noted that the method of investigation employed and the validity of the conclusions reached are open to all the objections which we have brought forward in the case of the psycho-analytical theories proper. It need only be remarked that the doubts we have expressed as to the scientific trustworthiness of the method of psycho-analysis cannot but be enhanced when we observe the remarkably discrepant results achieved by it in the hands of men who start with different preconceptions.

Jung's work is of very great interest and importance. Its chief tenets may be described as follows: A denial of the paramount significance of sex, and the substituting of the exclusively sexual libido of Freud by an undifferentiated libido having the significance of a general psychic energy, and capable of expressing itself through any channel of human interest and endeavour; the doctrine that the unconscious includes a collective element common to the race in addition to its personal content; a theory of the psychoneuroses which, although it accepts the Freudian view that the basis of these disorders lies in intrapsychic conflict, radically differs therefrom in its interpretation of the forces engaged and their mode of action. Finally, there is in Jung's conceptions a significant change in the general attitude and in the angle of attack. He insists that a simple reduction of mental processes to their causal elements is inadequate, and that they can only be understood if their teleological and prospective significance is taken into account; and that the symbols found in dreams and elsewhere are not merely "a sign of something repressed and concealed, but at the same time an attempt to comprehend and to point out the way of the further psychological development of the individual."[16]

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[13] MacCurdy: Problems in Dynamic Psychology, 1923, p. 132.

[14] See, for example, the theory of suggestion formulated by Dr. Ernest Jones in his paper The Nature of Auto-Suggestion, Brit. Jour. of Med. Psychol., 1923, p. 208.

[15] Adler's theories were originally developed in Studie über Minderwertigkeit von Organen, 1907, and Über den nervösen Charakter, 1912, both of which have been translated into English. A number of later works have since appeared, including Individual Psychology, English translation, 1925.

To consider the scientific validity of these various views would clearly be a formidable task, but we are fortunately relieved of the necessity of undertaking it by Jung's frank admission that his work does not satisfy the canons of science.[17] This admission is based partly on the contention that "purpose" cannot be included in the structure of science because it is opposed to the principle of causality upon which scientific method necessarily depends. We have seen that this contention is disputable, that "purpose" can be included in causality in a wider sense, and that a purposive psychology can therefore be built within the method of science, although it cannot contain the reversible sequences of mechanistic science.[18] Apart from this point, however, Jung's methods are certainly in part extra-scientific, and indicate a reversion to that admixture of psychology with the viewpoints of philosophy, ethics, and religion, which characterised the speculations of older days. But it is important to note that the admixture here is not due to a confusion of thought or a failure to distinguish the functions of the various disciplines, but is deliberately selected as likely to add most to human knowledge.

This is the chief interest of Jung's work in relation to the subject of the present lectures. It expresses a revolt against the view that the method of science must be the paramount arbiter of human knowledge, and attempts to substitute for this the principle that, while human life and thought cannot be explained by concepts belonging to science, they can be explained by other modes of attack. The question at issue is no longer whether psychology is capable of achieving the necessary standards of science, but whether science is capable of fulfilling the requirements of psychology. This is a bold step, but there is a good deal to be said in its justification. MacFie Campbell has remarked: "We are too much accustomed to think that there is only one correct way of dealing with experience, and that the angle, from which we personally come to experience, is the only one from which it can be approached. . . . The results and methods of others we are liable to see only as mistake and error, instead of merely as another way of dealing with experience."[19] It is here that the essential antithesis lies between the doctrines of Jung and of Freud. While Jung abandons science as incapable of dealing adequately with the problems of psychology, Freud strives to keep within its bounds. Moreover, in Freud's later work his conceptions approximate in their form to those of the mechanistic sciences, and the divergence from the point of view of Jung becomes still more marked. We have seen that there is some reason to question how far Freud has achieved success in this aim, but, even if success be admitted, Jung's attitude is a reminder that the method of science may conceivably not be the only weapon whereby the field of psychology can be attacked, and that it may ultimately prove to be an ill-adapted and essentially inadequate weapon. Dr. T. W. Mitchell, in a review of Freud's "Beyond the Pleasure Principle," says: "The pessimism which hangs like a cloud over the whole of this essay is perhaps the inevitable outcome of a belief, however achieved, in a mechanistic theory of life; and perhaps the criticism which will, in the end, invalidate Freud's arguments, may come, not from those who dispute the accuracy of his deductions, but from those who question the fundamental assumption on which all his reasoning rests—the assumption that all the phenomena of life and mind can be interpreted in terms of the physical sciences."[20]

Now no scientist with any appreciation of the real nature of science as a mere weapon for attacking and controlling our experience, and not as a unique road to the attainment of absolute knowledge, would contend that this is the only conceivable weapon, or that other weapons may not prove to be ultimately more effective. He may reasonably hold, however, that at present it is the only weapon which he feels he can trust, that the other methods hitherto proposed lead him into a sea of divergent speculations in which he can find no solid ground whereon to build with surety, and that he is at least justified in pushing the method of science to its limits in the field of psychology, before he consents to abandon a mode of attack which has succeeded in the past few centuries in giving us a control of our experience incomparably greater than anything before achieved.

Whether or no it will ultimately be shown that a psychology founded on the method of science is inadequate, it is at least desirable that we should know with certainty when we are employing that method and when we are going beyond it. The aim of the foregoing criticism of Freud's work has been to set out in broad lines the respects in which it satisfies the canons of scientific validity, and those in which it appears to fall short thereof. The reproach will rightly be levelled at this criticism that it attains to no certain point of acceptance and rejection, and it can only be pleaded in justification that this picture of benevolent scepticism portrays faithfully the stage in the road of conviction to which the mind of the writer has succeeded in travelling.

### THE SPHERES OF MEDICINE AND SCIENCE.

These various considerations lead us to a further point. The spheres of medicine and science are not quite the same, however much we may strive to identify them. On the one hand, medicine is partly an art, and on the other hand its essential goal is therapeutic result, and not the acquirement of pure knowledge. Therapeutics has a normative aim, and normative aims cannot be fitted squarely into the structure of positive science. Hence medicine cannot afford to submit itself entirely to the narrow and rigid limits of science, but must demand a greater degree of freedom. In therapeutics it is justifiable to act on hypotheses which lack full or perhaps any scientific validity. Medicine has always claimed this right in very liberal measure, and the principle must be applied to the sanctioning as therapeutic procedures of psycho-analysis and the many variants and derivatives of psycho-analysis, until our knowledge is commensurate with the task of giving or denying to them an assured place in our professional armoury.

Finally, a word may be said concerning the actual and potential relationships of psychopathology to the other avenues of attack which seek to penetrate the field of medicine. In the first lecture it was pointed out that, while psychology must insist upon the privilege of formulating its own concepts and extending these so far as they are found to be useful in the explanation of human life and behaviour, the possibility must always be kept in mind that these concepts may ultimately be capable of reduction to the wider concepts of some other branch of science. Just as the concepts of physiology may in the future be brought under the concepts of chemistry and physics, so may psychology be merged in a wider physiology and psychopathology in a wider pathology. This complete merging may never be practicable; portions of experience only to be dealt with by psychological conceptions may "stick out," however far we may ultimately succeed in thrusting the major part of the phenomena of psychology into a physiological or chemical framework. We have seen, for example, that "purpose," which seems to be an integral factor in psychology, appears to be inherently incapable of incorporation into the structure of mechanistic science.[21] Nevertheless, as each branch of science is justified in endeavouring to explain as much of our experience as it can, the aim of subsuming the concepts of one branch under the wider concepts of another branch is clearly a desirable one in the interests of the unification of knowledge. It will therefore be profitable to inquire how far such an aim has been achieved or shows prospects of being achieved so far as psychopathology is concerned.

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[16] The later developments of Jung's thought will be found in his Collected Papers on Analytical Psychology, English translation, second edition, 1917; Psychology of the Unconscious, English translation, 1916; Psychological Types, English translation, 1923.

[17] Jung: Analytical Psychology, English translation, second edition, 1917, p. xv.

[18] Cf. Lecture II.

[19] MacFie Campbell: On Recent Contributions to the Study of the Personality, published in Problems of Personality (Studies in Honour of Morton Prince), 1925, p. 74.

[20] T. W. Mitchell: Brit. Jour. of Med. Psychol., 1923, p. 242.

We must confess that up to the present time but little solid progress in this direction can be reported, though innumerable attempts have been made to bring the problems of psychology and psychopathology under the conceptions of physiology. Most of these attempts have consisted, however, in the preliminary acceptance of a psychological conception and a subsequent free translation of its terms into hypothetical nerve forces and nerve units, a process which seems to give ineffable satisfaction to certain minds, but which adds little or nothing to our knowledge and understanding. Other attempts have led to the construction of anatomical and physiological concepts built entirely in the air, without basis or means of verification on the plane of objective facts, and therefore without scientific justification or utility. Nevertheless, something has been done, and vistas have been opened up along which prospects of considerable future progress may be discerned. One such vista has been offered by the development of endocrinology. It is not difficult to foresee a time in which the psychological conceptions of instinct and instinctive force may be partially reduced to the conceptions of biochemistry, and Freud has himself envisaged the possibility of certain of his concepts becoming ultimately capable of interpretation in biochemical terms. In the present state of our knowledge, however, all this does not take us very far beyond the realm of speculation. However desirable the merging of psychopathology in general pathology may be held to be, it must be admitted that the time for its consummation has not yet arrived, and that there is a field in which psychopathology can aid our understanding and our practice in a way not yet possible for physiopathology. So long as this holds it is more profitable, both for science and for medicine, that psychopathology should be allowed to march independently as best it can, rather than that general pathology should burst its legitimate bounds in a dubious attempt to incorporate phenomena with which it is at present unfitted to cope.

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[21] Cf. Drever, Instinct in Man, second edition, 1921, p. 5. ". . . the psychologist finds in the psychical series important factors, which have, and can have, no analogue in the physical series, as, for example, conscious purpose. It may be argued, therefore, that psychology will always preserve biology from being swallowed up by physiology."

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South London Hospital for Women.—Viscountess Cowdray, the chairman, will preside at the annual general meeting to be held at 10, Carlton House-terrace, London, S.W., on Wednesday, April 21st, at 3.15 P.M. when the speakers will be Sir Humphry Rolleston, M.D., Sir Park Goff, M.P., and Prof. Winifred Cullis, D.Sc.

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# BLOOD-SUGAR STUDIES IN ENCEPHALITIS LETHARGICA.

By P. K. McCOWAN, M.D. Edin., M.R.C.P. Lond., D.P.M.,

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AND

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The following report presents some of the results obtained from a series of investigations that are being carried out in connexion with cases suffering from the certifiable sequelæ of encephalitis lethargica who have come under the care of the Mental Hospitals Committee of the London County Council. By special arrangement the majority of these cases are now admitted to West Park Mental Hospital.

The mental aspect of a series of such cases has been dealt with by one of us (P. K. McCowan),[1] and in this investigation the cases have been submitted to metabolic function tests—viz.: (1) the blood-sugar response to glucose ingestion; (2) the lævulose test for the glycogenetic function of the liver. The lævulose test for liver glycogenetic efficiency was considered worthy of investigation in view of the work of various observers—e.g., Ottonello,[2] and Runge and Hagemann,[3] indicating that inefficiency of liver function is a practically constant feature of post-encephalitic Parkinsonism, leading to the supposition that in the acute stages of the disease the liver is implicated just as it may be in any severe infection, and that in due course its function becomes a dysfunction. If this reputed liver dysfunction was actually present it might be expected that the lævulose test would show it, and incidentally point to hepatic insufficiency as a possible cause of the abnormal sugar curves obtained.

### *The Blood Curve in Encephalitis Lethargica.*

It has been shown that marked abnormalities of the blood-sugar curve following glucose ingestion may occur in mental disorders; also there is evidence that variations in the blood sugar curve may give indications of the progress of the case and also be a useful guide to therapy and treatment.[4] For these reasons the blood-sugar curve following the ingestion of 50 g. glucose has been investigated, and work on the variations produced by therapy, with especial reference to hyoscine treatment, is still in progress. The latter will be reported in a later note, but the types of blood curves found in 15 cases will be reported in this paper. The investigations were made on the morning following a 12 hours' fast, the patients being in bed and the room being kept at a temperature of about 65° F. The blood-sugar values were determined at fixed intervals up to two and a half hours after the ingestion of 50 g. glucose in 8 oz. of water. The blood-sugar estimates were made by the Calvert method.[5]

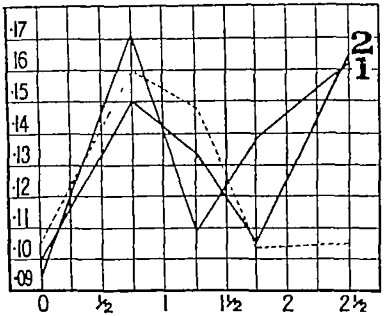
The normal blood curve is now well known, and it is sufficient to say that in the normal individual glucose ingestion is followed by a variable rise in blood-sugar (about 0·17 per cent. after 45 minutes), followed by rapid glycogenesis and a fall to the original fasting level within two hours of administration of the sugar meal. A sustained hyperglycæmia, according to MacLean,[6] indicates a defective storage mechanism and impaired glycogenetic function of the organism.

The factors concerned with the rise and the fall of the blood-sugar curve have been dealt with in detail,[4] and a summary may be helpful in the endeavour to appreciate the significance of the results obtained.

The rise of the blood-sugar curve depends on rate of absorption and glycogenolysis, and the fall on excretion, combustion, and storage (glycogenesis). The factors concerned with increased glycogenolysis and resultant hyperglycæmia are: (1) hyperthyroidism and increased secretion of the pars nervosa of the pituitary; (2) increased activity of the sympathetic system with hyperactivity of the suprarenal glands; (3) increased pH of the liver (Langfeldt [7]). The only known factor concerned with glycogenesis is the pancreas.

*Figs. 1 to 4 are Blood-sugar Curves following 50 g. Glucose; Encephalitis Lethargica. The dotted line shows the normal blood-sugar curve.*

FIG. 1.

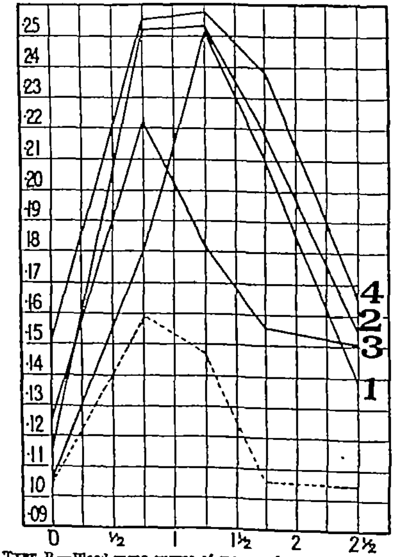


TYPE A.—Blood-sugar curve normal in shape, but followed by a secondary hyperglycæmia.

### *Types of Blood-Sugar Curves Obtained.*

Examination of the blood-sugar curves showed that they fell into three definite and distinct types. These, for the sake of clearness, have been named A, B, and C.

FIG. 2.



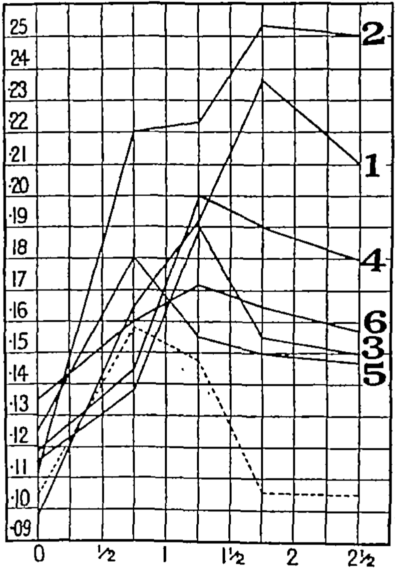
TYPE B.—Blood-sugar curves of more or less normal contour, but with high maximum blood-sugar values.

*Type A.*—Curves at first normal in shape, but followed by a secondary hyperglycæmia. The blood-sugar percentage reaches its maximum and falls to the fasting level in the normal length of time (about one and a half hours), but thereafter immediately rises to a considerable height. Two cases belong to this group. One shows Parkinsonism plus emotional facility (Fig. 1 (1) ), the other shows Parkinsonism plus apathy (Fig. 1 (2) ).

*Type B.*—Curves with a more or less normal contour but with high maximum levels (above 0·2 per cent.). The maximum levels of the curves in this group lie between 0·2 and 0·20 per cent., but each curve at the two and a half hour interval has almost regained the fasting level. There is no sustained hyperglycæmia. Four cases are found in this group and their mental and physical states are enumerated below: (1) Parkinsonism without undue apathy or depression (Fig. 2 (1) ); (2) Parkinsonism plus apathy (Fig. 2 (2) ); (3) Parkinsonism plus depression (Fig. 2 (3) ); (4) slight Parkinsonism plus mild depression (Fig. 2 (4) ).

*Type C.*—Curves showing sustained hyperglycæmia. Six cases belong to this group: (1) Mild Parkinsonism, with depression and persecutory delusions (Fig. 3 (1) ); (2) paralysis agitans plus agitated melancholia (Fig. 3 (2) ); a case included in the series on the hypothesis that paralysis agitans and encephalitis lethargica are the result of the same pathological condition; (3) Parkinsonism plus emotional facility (Fig. 3 (3) ); (4) Parkinsonism plus marked apathy (Fig. 3 (4) ); (5) no *Parkinsonism* but a "difficult" type (Fig. 3 (5) ); (6) no Parkinsonism but of "apache" type (Hall) plus epilepsy (Fig. 3 (6) ).

FIG. 3.



TYPE C.—Blood-sugar curves showing sustained hyperglycæmia.

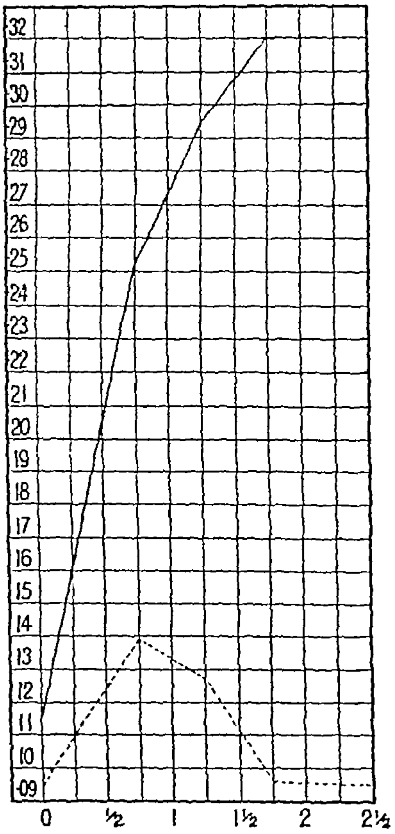
Two of these curves show very high maximum levels (Fig. 3 (1 and 2) ). Fig. 4 shows a curve which belongs to the C type, but, on account of its extreme maximum value, it was found necessary to place it *in a separate* diagram. The patient was in a stuporose condition and showed *numerous* physical *sequelæ* of encephalitis lethargica.

Two of the cases in this group (Type C) showed a slight glycosuria two hours after the ingestion of glucose. In no other of our cases was glycosuria found.

### *Discussion.*

Any attempt to interpret the abnormalities shown in the above-described types of curve cannot in the present state of our knowledge of carbohydrate metabolism be in any respect final, but one or two points seem to be worthy of consideration. In those curves depicted in Fig. 1 as belonging to Type A we have an appearance which resembles the normal blood-sugar curve. In the latter there is quite commonly a reactionary rise which, however, does not occur to such an extent as in this type of encephalitic curve. It is quite possible that this abnormally marked reactionary hyperglycæmia is due to a state of hyper-excitability in some part of the body mechanisms concerned with metabolism. In Type B (Fig. 2) the curves are all of the kind which one associates with a state of hyperthyroidism, but there was no clinical evidence of this disorder in the cases under review.

FIG. 4.



Blood-sugar curve showing high blood-sugar values and markedly sustained hyperglycæmia.

Type C is composed of curves which show sustained hyperglycæmia. This kind of curve is very commonly met with in other types of mental disorder. It will be noted that the curves that show the most markedly sustained hyperglycæmia with high maximum levels (Fig. 3 (1 and 2)) are found in cases whose mental state is one of melancholia. This agrees with the findings of Drury and Farren Ridge,[8] Mann,[4] and other observers, who have shown that the greatest interference with carbohydrate metabolism is found in patients who exhibit melancholia or stupor. That the latter mental state can be associated with great abnormality in carbohydrate metabolism is further proved by the case shown in Fig. 4. This patient was in a stuporous state when the blood-sugar curve was obtained, and she died some weeks later of encephalitis lethargica. This prolonged hyperglycæmia which is shown by the curves in this group is due to some interference with glycogenesis. It must be remembered, however, that blood-sugar curves showing sustained hyperglycæmia are obtained in infective conditions quite unassociated with mental abnormalities. Thus Olmsted and Gay[9] show sustained curves in a number of cases of focal infection. Pemberton and Foster,[10] investigating chronic arthritis, obtained curves showing sustained hyperglycæmia in severe cases, but normal curves were obtained following removal of the septic focus (teeth or tonsils).

Stavely Dick [11] reports hyperglycæmia and high and prolonged blood-sugar curves following glucose administration, after vaccine injection in non-diabetic cases. He would explain this as a defensive hyperglycæmia, but Allen,[12] in his comments on these results, regards them as due to toxic depression of pancreatic function. In this connexion it is of interest to mention that Rosenthal [13] showed that the injection of diphtheria toxin prevented glycogen formation.

It has been suggested by one of us [1] from a cli
study of the cases of this series that encepha
lethargica is a toxæmia which from an acute o
often passes into a chronic progressive condi
The longer these cases remain under observation
more we are inclined to think that we are dealing
an actively progressive disease like para-syphilis.
sugar curves in the present series support this t
in that their abnormalities are quite explicable i
patients are regarded as suffering from a ch
toxæmia. It might be mentioned here that one
which is not included in any of the diagrams ga
typically normal sugar curve. This patient
admission was of the "difficult" type of Hall, b
the time of these investigations appeared to
recovered and was discharged a few days later.

From the clinical standpoint it was impossib
divide the cases into three classes which w
correspond with the three types of sugar cu
Neither from the physical nor mental point of
could any such correlation be made. Thus
showing the Parkinsonian syndrome accompanie
mental apathy were found in all three types.
likely that these abnormal sugar curves are just
expression of a general disordered metabolism,
it is probable that with appropriate investiga
further important metabolic defects may be discov

## *Lævulose Test for Liver Efficiency.*

In this investigation the lævulose test was
formed in 16 cases. As in the glucose investiga
the tests were made in the morning followi
12 hours' fast with the patients in bed, at a uni
temperature. In each case 40 g. lævulose (app
mating to the lævulose dosage per body-weig
Spence and Brett [14]) was administered in 8 o
water, and the blood-sugar values determine
intervals up to two and a half hours after the c

| Name. | Sex and age. | Type of case. | Percentage of sugar in the bl | | | |
|---|---|---|---|---|---|---|
| | | | Before 40 g. lævulose fasting level. | After 40 g. lævul | | |
| | | | | 45 min. | 75 min. | 105 min. |
| S. W. | M 12 | Difficult (Hall). | 0·100 | 0·112 | 0·109 | 0·098 |
| R. C. | M 20 | Slight P. | 0·106 | 0·120 | 0·106 | 0·100 |
| H. P. | M 23 | P. | 0·116 | 0·109 | 0·109 | 0·112 |
| F. Mc. | M 21 | P. | 0·106 | 0·106 | 0·112 | 0·100 |
| E. D. | M 50 | Depressed | 0·109 | 0·128 | 0·120 | 0 112 |
| M. K. | F 26 | P. + depressed | 0·109 | 0·112 | 0·109 | 0·109 |
| D. G. | F 31 | Apache. | 0·106 | 0·109 | 0·116 | — |
| M. Cl. | F 29 | P + apathy. | 0·124 | 0·133 | 0·128 | 0 100 |
| A. M. | F 36 | ,, | 0·098 | 0·098 | 0·103 | 0·120 |
| E. C. | F 18 | Apache. | 0·128 | 0·100 | 0·109 | 0·100 |
| B. D. | F 20 | Difficult. | 0·098 | — | 0·124 | 0·133 |
| V. C. | F 18 | P. + stupor. | 0·138 | 0·150 | 0·144 | 0·150 |
| C. D. 1 | M 30 | P. + depressed. | 0·112 | 0·138 | 0·138 | 0·106 |
| ,, 2 | | | 0·120 | 0·150 | 0 128 | 0·109 |
| J. C. 1 | M 50 | P. + apathy. | 0·095 | 0·112 | 0·120 | 0·128 |
| ,, 2 | | | 0·109 | 0·116 | 0·116 | 0 109 |
| S. H. 1 | M 19 | P. + E.F. | 0·103 | 0·116 | 0·133 | 0 120 |
| ,, 2 | | | 0 100 | 0·116 | 0·116 | 0·112 |
| G. T. | M 63 | Paralysis agitans. | 0·109 | 0·120 | 0·124 | 0·106 |

P. = Parkinsonism. E.F. = emotional facility.

hydrate ingestion. The blood-sugar determina
were made by the Calvert method.[6] The re
obtained are given in the table.

The lævulose test is based on the experim
findings of Sachs [15] and F. C. Mann and Maga

that probably the liver alone is concerned with glycogenesis following lævulose ingestion. It was generally accepted that the normal individual gave no appreciable blood-sugar rise following a lævulose meal, whereas cases of hepatic disease showed disturbance of the glycogenetic function and a rise of blood-sugar resulted. The variations in the normal response have been investigated by one of us (S. A. Mann[17]) and by Tallermann,[18] and it is evident that an appreciable blood-sugar rise can occur in the normal individual.

The interpretation of these results presents a certain degree of difficulty, for observers are by no means unanimous as to what should constitute a positive result; that is, what is to be looked upon as definitely indicating the presence of hepatic insufficiency. Beaumont and Dodds[19] consider that if the blood-sugar level exceeds 0 14 per cent., or if a rise of 30 mg above the fasting level occurs after 40 g lævulose, then the reaction may be accepted as positive De Wesselow,[20] on the other hand, states that if a hyperglycæmia of 0 18 per cent. occurs and persists for more than two hours after the lævulose ingestion it can safely be concluded that there is some hepatic dysfunction present. According to Beaumont and Dodds's criteria four cases (B D., V C, C. D 1, J C 1) show positive results; according to De Wesselow one case (J C 1) is definitely positive. From the examination of normal cases and a large number of mental cases,[17] however, it would seem that a positive reaction should be considered not so much in relation to the blood-sugar level attained, but more with regard to the persistence of hyperglycæmia two hours or longer after the lævulose ingestion. It is the general contour of the curve which is important In the normal person the blood-sugar level after a lævulose meal has returned to the fasting level by the end of two to two and a quarter hours, and any definite tendency on the part of the curve to remain elevated to an appreciable extent after this period of time should be considered as denoting the presence of hepatic insufficiency Judged from this standpoint three cases (B D., J C 1, S H. 1) show positive reactions It will be noted that certain of the cases (C D, J C, S H.) which gave results which might be considered as indicating a positive reaction according to one or more of the various criteria were given a second meal of lævulose after an interval of seven days, when all of them gave strictly normal curves This would seem to indicate, if reliance is to be placed on the lævulose test, that the liver insufficiency in these cases was of a purely temporary nature.

It can therefore be concluded that, although certain observers maintain that there is hepatic inadequacy in encephalitis lethargica, this is not borne out by the results of the lævulose test It must be remembered, however, that the value of this test in demonstrating slight degrees of hepatic derangement is somewhat problematical.

### *Blood Sugar Fasting Levels in Encephalitis Lethargica.*

It is held by some investigators that an increase of sugar in the cerebro-spinal fluid is diagnostic of post-encephalitic conditions. Our work agrees with that of Halliday[21] in controverting this opinion Goodwin and Shelley[22] have found a constant ratio between the fasting blood-sugar level and the spinal fluid sugar (60 per cent.) In view of this finding, the fasting blood-sugar levels of the present series support the conclusions of Halliday that there is no characteristic increase of the sugar in the C-S.F in fasting post-encephalitic patients An increased blood-sugar and spinal fluid value may occur in this condition, but is by no means characteristic of it, and no diagnostic value can be placed in such findings

### *Conclusions*

1. In post-encephalitis lethargica there is definite derangement of carbohydrate metabolism as shown by the blood-sugar curves. 2 The lævulose test does not support the contention that there is definite permanent hepatic insufficiency in post-encephalitis lethargica 3 The majority of post-encephalitis lethargicas show a hyperglycæmia following glucose ingestion, markedly sustained in 50 per cent of cases. 4. The mental states of depression and stupor were associated with the most pronounced abnormalities of carbohydrate metabolism. 5 No correlation could be found between the clinical pictures and the types of blood-sugar curves obtained. 6 Although no diagnostic value can be placed on blood-sugar curves in post-encephalitis lethargica, the fact that the only normal curve was obtained in a patient who had recovered from his psychosis suggests that prognostic significance may be attached to them. 7. The hyperglycæmia found in all the cases is quite in keeping with the suggestion that encephalitis lethargica is of the nature of a toxæmia, usually acute in onset, but becoming chronic in nature

In conclusion, we would express our indebtedness to Dr Golla, director of the Central Pathological Laboratory, Maudsley Hospital, for his unfailing interest and guidance, and to Dr. Roberts, medical superintendent, West Park Mental Hospital, for permission to publish details of cases

### *Bibliography*

1 McCowan P K THE LANCET, 1925 i., 277
2 Ottonello P La Diagnosi 1924, iv, 1
3 Runge, A. Hagemann J, Arch. f Psych., 1921 lxxii. 1, 114
4. Mann, S. A. Jour Ment. Sci., 1925, lxxi. 443.
5 Calvert, E. G B Biochem. Jour, 1925, xviii., 837
6 MacLean H Ibid. 1919, xiii., 135
7 Langfeldt, E.: Jour Biol. Chem., 1921, xlvi., 381.
8 Drury K. K. Farren Ridge C Jour Ment. Sci., 1925 lxxi., 8
9 Olmsted, J M. D Gay G Arch. Int. Med., 1922, xxix., 384
10 Pemberton, R., and Foster G L.: Ibid., 1920, xxv, 243.
11 Dick J Stavely: Brit. Med. Jour, 1924, i., 170
12. Allan G A.: Ibid. 1924, i. 215
13 Rosenthal M. Quoted by Lusk, G Science of Nutrition, 522
14 Spence, J C. and Brett, P C THE LANCET, 1921, ii., 1362
15 Sachs, H Zeit. f. klin. Med. 1899, xxxvii., 87
16 Mann, F C and Magath T B. Ergebnisse der Physiol., 1924 xxiii. 212
17 Mann S. A. Jour Ment. Sci., 1925, lxxi 474.
18 Tallermann K. Quart. Jour Med. 1923 xvii., 37
19 Beaumont, G E., and Dodds, E. C.: Recent Advances in Medicine 1925
20 De Wesselow O L. V Chem of Blood in Clin. Med. 1924
21. Halliday, J L. Quart Jour Med., 1925, xviii., 300
22 Goodwin G N, and Shelley, H Arch. Int. Med. 1925, xxxv., 242

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# THE STEAM CAUTERY

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THE destruction of malignant tumours by heat is probably one of the most ancient forms of surgery, but with the introduction of methods of direct removal the actual cautery fell into disuse. Yet there are many malignant growths whose removal by direct surgery is difficult or impossible, and for these heat has again been invoked, by the use of the diathermy current. Over the actual cautery this possesses the advantage of deep penetration, whilst, instead of being rapidly burnt away, the tissues are coagulated. The slow separation of the slough allows time for granulations to form, so that the tumour is converted into a foreign body and is cast off by natural processes.

Precisely the same result may be obtained in a much simpler manner by the slow penetration of heat from a cautery maintained at a low temperature, and this is very conveniently done by a current of dry steam. For the past two years I have been using an instrument of my own device founded on this principle, and the results have exceeded my expectations. It is constructed as follows. (See figure)

Steam is generated in a small boiler (A), solid "meta fuel" being conveniently used as a source of heat The steam is superheated by being carried directly through the flame, and it then passes along a thick rubber tube (B) to an insulated handle (C). This terminates in a nozzle on to which applicators of various forms (D, a, b, c, d, and e) can be screwed, and the steam, after entering the applicator, returns by the handle to the discharge tube. It will thus be seen that the applicator is maintained constantly at a temperature closely approximating to 100° Centigrade

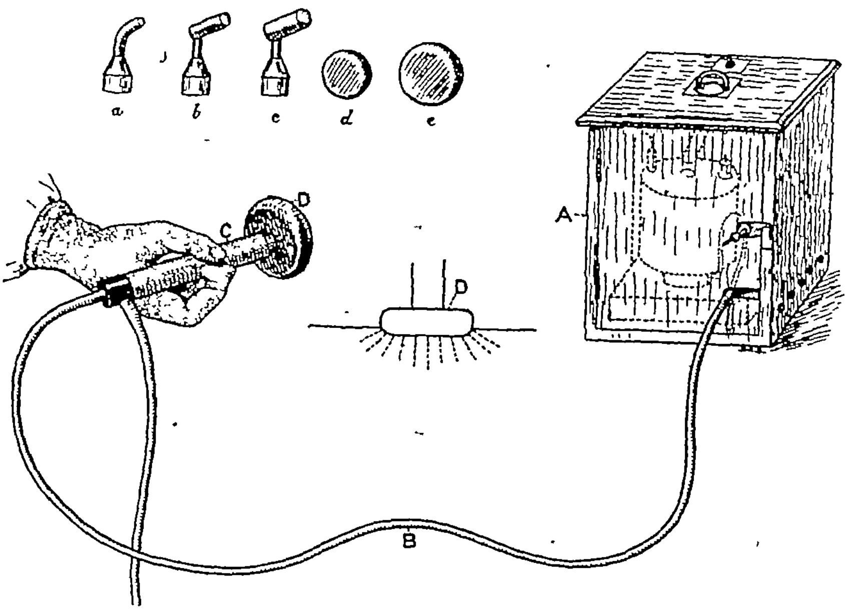
The applicators vary in size from small points up to metal discs 3 inches or more in diameter.

### *Method of Application.*

So long as the applicator is kept in contact with the tissues heat slowly penetrates and produces coagulation, the depth of penetration for any one applicator being simply a function of the time and of the permeability of the tissues. With the large applicators and on moist tissues penetration takes place at the rate of about 1 inch in ten minutes. This can be easily demonstrated upon a piece of beef-steak, and a section will show at once the complete coagulation which results, an exceedingly tough coagulum being formed.

Though this method resembles diathermy, it differs in important details. In contrast to diathermy very large applicators may be used, the rate of penetration being slightly greater with large applicators than with small ones. With large applicators it is an exceedingly powerful machine, and I venture to think that it is the most potent appliance we at present possess for dealing with large masses of inoperable growth. The rate at which great masses of fungating carcinoma coagulate and disintegrate before it is astonishing, and yet in the end dense coagulum is left which gives ample protection to the deep tissues and allows time for their recovery, for the closure of large vessels, and for the formation of granulation tissue.

Although the instrument was originally devised for dealing with large inoperable growths, it has been found in practice to be applicable to a number of other conditions. The depth of penetration is uniform over the surface of application and is under perfect control, so that small superficial growths and ulcers can be treated with certainty and yet without risk to the underlying deep structures.



The method has been found of peculiar value in the treatment of epithelioma of the skin, especially where this arises on a scarred surface, as after the treatment of lupus and similar conditions by X rays. We have, unfortunately, seen a large number of these cases, and they sometimes present a surgical problem of great difficulty. Excision leaves a widely gaping wound, which heals but slowly owing to the underlying fibrosis and the endarteritis which the rays have caused. Suture of the margins is useless, and grafts take but poorly. We have found that destruction of the growth by the steam cautery, easily carried out under local anæsthesia, leaves a much smaller wound, protected by a tough coagulum. When this separates a granular surface will be found on which a graft takes readily.

### *Illustrative Cases.*

The following cases illustrate a few of the applications of the method.

CASE 1.—A. B., a man aged 53. For 33 years he had suffered from lupus which had extended over practically the whole of his face and neck, and the whole of this area was now covered by the scars of healed lupus. He had been treated with Finsen light at the London Hospital and with X rays elsewhere. For five years a nodular growth had been gradually spreading above the left angle of the mouth. A small part of the nodule was excised and the remainder and the whole of the base treated with the steam cautery. Sections showed it to be a squamous carcinoma. The cauterised area healed rapidly and after nine months it cannot be distinguished from the rest of the surface. There is no trace of recurrence.

CASE 2.—C. D., a man aged 40. Ten years ago he had prolonged treatment with X rays for sycosis barbæ, and the whole of the beard area was covered by scar tissue. For a few months an ulcer had been spreading in the left malar region; it was now about 1 inch in diameter, and had all the characteristics of an epithelioma. It was treated by the steam cautery and four weeks later a Thiersch graft was applied. The graft took at once. Six weeks later, though still perfectly healed, the appearances suggested a recurrence of growth below the graft. For safety's sake the graft and the tissue beneath it were excised. The section showed nothing at all but fibrous tissue covered by epithelium. The small wound left healed rapidly.

CASE 3.—E. F., a man aged 47. Twenty years ago lupus began on the left side of his face and spread until the whole of the cheek and the left side of the neck were involved. It was treated with X rays and this area was converted into scar-tissue. For two and a half years a warty out-growth on the scar had steadily increased in size, until it now formed a huge fungating mass extending from the nose to the mastoid process and down into the neck. The whole of the growth was removed with the steam cautery and six weeks later it was found possible to graft three-quarters of the area, the grafts taking well on sound granulation tissue. The growth, however, spread further down the neck and involved the vessels, so that in spite of the local success further treatment of the case had to be given up as hopeless.

CASE 4.—G. H., a woman aged 24. For a year she had suffered from hyperthyroidism with tachycardia and slight enlargement of the thyroid. She had been treated on several occasions with X rays, but after one of these she noticed a severe erythema of the epigastrium. The treatment was discontinued for a time, but on its resumption the erythema recurred, the skin broke down, and a deep ulcer formed. It was then found that the shield of the X ray tube was defective. In the epigastrium there was an ulcer 3 inches in diameter and extending deeply into the tissues; the recti muscles themselves were exposed. It was thought that such an ulcer was almost sure to become malignant, but as it was grossly septic, and as its effective excision must at least reach the peritoneum, it presented a very difficult problem. By means of the largest applicator of the steam cautery the whole ulcer was dried up and rendered sterile, and this huge sterile coagulum was then excised. On freeing the deep tissues and undercutting the skin it was found possible to close the wound and it healed by first intention, leaving only a median scar.

CASE 5.—J. K., a man aged 21. A year previously he had been thrown from a motor-bicycle and his face badly scored. The right side of the face and the left side of the nose were covered by deep scores rendered very noticeable by the fact that they contained pigment, probably tar, situated in the dermis. Excision of such extensive scarred areas was out of the question. With a small point attached to the steam cautery each scar was carefully coagulated so that the actual points of pigment sloughed out. The result was extraordinarily good, the resulting white scars being scarcely noticeable.

### *Wide Range of Utility.*

It will be seen that the steam cautery has a wide range of utility. With large applicators it can be used as an instrument of great power for the destruction of large masses of malignant growth. With small points it can be used in the most delicate manipulations of facial surgery. It has probably many applications in the treatment of pathological conditions of the skin and the accessible mucous membrane, and under certain circumstances its powers of sterilisation can eliminate gross sepsis and greatly simplify surgery. It appears to be capable of accomplishing all that can be done by diathermy, with greater facility, with less risk, and at a minute fraction of the cost.

The instrument was produced in my experimental laboratory at the London Hospital. It can now be obtained from Messrs. Allen and Hanburys.

# ELECTROCARDIOGRAPHIC CHANGES IN RHEUMATIC CARDITIS.

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THE modifications of cardiac rhythm in acute rheumatism were investigated by Parkinson, Gunsen, and Gosse,[1] who found some alteration in 30 per cent. of cases. Recently, Cohen and Swift,[2] working on the same lines, noted heart-block, flutter, and fibrillation during the acute attack. Both these investigations were limited to the time in which the patient remained in bed, and in nearly every instance acute articular rheumatism was present at the time of investigation.

In children it is well known that the rheumatic infection may take different forms. There may be no acute onset with pyrexia, the joints may not be affected at all, but the infection may reveal itself by the appearance of subcutaneous nodules, by the involvement of the central nervous system, giving rise to chorea, or be disclosed by a history of migratory limb pains, more or less severe, which may be accompanied by anæmia, tonsillitis, listlessness, and loss of weight, &c. In any of these forms there is a special tendency for the heart to be attacked, so that a child may be brought up for the first time on account of limb pains and loss of flesh, and be found to have an apex-beat outside the nipple line and a developed mitral lesion. This condition has been described as rheumatic carditis. Although well recognised clinically, there are as yet few observations controlled by the electrocardiograph on children with this affection who were not sufficiently ill to be confined to bed. We have, therefore, observed a series of 50 children attending a special rheumatic out-patient clinic. The clinic consisted of about 400 patients, of whom 40 per cent. had cardiac lesions. Those utilised were not specially selected; their ages varied between 4 and 13 years.

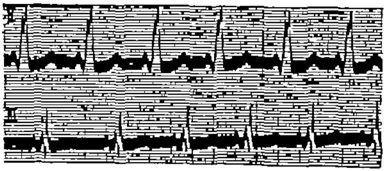
The patients were examined by two observers independently, and the physical signs compared. The size of the heart was determined by taking the apex-beat as the left border, and dullness to percussion for the right border. When any doubt arose the findings were checked by X ray examination. In grouping the cases according to valve lesions the following method was adopted. A few cases with heart enlargement were found to have no murmur, or a systolic which was localised to the apex. These were termed myocardial on the assumption that any incompetence of the mitral valve was due to the enlargement of the left ventricle rather than to disease of the valve. Mitral disease was assumed to be present when the systolic murmur was well conducted. Any diastolic or presystolic murmur at the apex was taken to denote the presence of mitral stenosis. The last group consisted of those in whom aortic regurgitation was present in addition to the mitral lesion. To these were added two cases who presented the physical signs of adherent pericardium.

### *Summary of Cases.*

The following abnormalities were found:—

1. Evidence of impaired conduction from auricle to ventricle through a lengthening of the P.R. interval to over 0·2 of a second was noted in two cases. In both there was an established mitral lesion. This is known to be associated with heart-block in the adult, and is probably due to an extension of the fibrosing process from the base of the valve down to the A.V. conducting system.

2. Impaired intraventricular conduction "arborisation block," as shown by a widening of the Q.R.S. complex with notching of the R wave, was noted in one case (see figure). This patient had a P.R. interval of 0·08 second, or half the average interval found in the series. It is probable, however, that the impulse arose normally in the sino-auricular node, and that the remainder of the P.R. interval was lost in the widened Q.R.S. He had no valve lesion, but the heart was enlarged.



Leads II. and III. showing a P.R. interval of 0·08 sec., a notched and widened Q.R.S. complex, and an early depression of the T wave.

3. Inversion of the T wave in leads II. and III. was present in two cases. One at the age of 12 had a double valve lesion, and had already been in the hospital for cardiac failure. The other had a large heart without valve lesion. Inversion of T in lead III. only occurred in a further six cases, but was not taken as evidence of myocardial disease.

4. A depression of the S.T. interval followed by a small T occurred in three cases. This took the same form as that caused by digitalis. No digitalis, however, had been given. One child died three months after examination. Another had an adherent pericardium and a very large heart. The third, who does not show it so characteristically, has already been described for abnormalities with the Q.R.S. complex.

5. Extrasystoles were found once only. They were auricular in origin; were frequent, and had been noted for over a year. The patient had a large heart without a valve lesion.

6. Sinus arrhythmia of a slight grade was commonly present when the rate was slow. The child in whom it was most marked had an advanced carditis with a large heart and mitral incompetence.

7. Predominating hypertrophy of either ventricle. Although several cases of aortic disease were examined, in one only was there any sign of a left ventricular preponderance, and in that the S wave measured 7 mm. A right-sided preponderance was found in two cases. In one at the first examination the

### 1. MYOCARDIAL GROUP.

| Case. | Initials. | Age. | Evidence of rheumatism. | | | Cardiac signs. | | | | Electrocardiograph. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (a) Acute rheum. (b) Chorea. (c) Nodules. | Pains. | Tonsillitis. | Apex in cm. from nipple. | Right border in cm. from mid-sternum. | Sounds at apex. | Sounds at base. | Rate. | — |
| 1 | H. B. | 10 | — | 1 m. | — | 21/12/24 N.L.<br>28/3/25 1 cm. O.N. | 5<br>3 | Systolic after exercise.<br>Sounds evenly spaced. | —<br>— | 98 | P.R. = 0·08. Q.R.S. = 0·1 sec. with notching of R in leads II. and III.<br>Early depression of T in all leads (see Fig.). |
| 2 | H. C. | 10 | — | 3 y. | + | 2 cm. O.N. | 3 | Soft systolic. | — | 80 | Frequent extra auricular systolic.<br>T wave : 1 mm. in lead II. : inverted in lead III. |
| 3 | M. H. | 9 | — | 2 y. | + | 15/11/24 I.N. slapping.<br>14/2/25 N.L. | 5<br>5½ | Short systolic sounds evenly spaced.<br>Systolic conducted out. 1st reduplicated on left side. | —<br>P.2 + | 108 | Inversion of T in leads II. and III. |
| 4 | D. H. | 7 | — | 1½ y. | + | I.N. | 3 | 1st just audible. | P.2 + | 105 | T : 1 mm. in lead II. : inverted in lead III. |
| 5 | H. P. | 9 | — | 1½ y. | T.R. 6 m. | 2½ cm. O.N. | 5 | 1st +. Systolic conducted out 1 inch. | — | 90 | Right-sided preponderance. |
| 6 | M. S. | 9 | (a) + | 3 m. | — | 1 cm. O.N. | 4 | Soft systolic. | P.2 + | 102 | Normal. |
| 7 | A. E. | 8 | (a) + | 7 m. | + | ” | — | Systolic just audible. | — | 86 | ” |
| 8 | E. K. | 10 | (a) 1924 | 1 y. | — | 2 cm. O.N. | 4 | Soft systolic. | — | 86 | ” |
| 9 | B. W. | 6 | (a) 1924 (c) + | + | — | N.L. | 2 | ” | — | 70 | ” |
| | | | | | | **2. MITRAL REGURGITATION.** | | | | | |
| 10 | D. G. | 10 | — | 4 y. | + | 2 cm. O.N. | 2 | 1st replaced by harsh systolic conducted out. | P.2 + | 100 | P.R. interval = 0·21 sec. |
| 11 | E. H. | 5 | (c) + | 2 m. | — | 1 cm. O.N. | 2 | Rough systolic conducted out. | — | 129 | Normal. |
| 12 | S. K. | 10 | (a) 1923 | + | — | ” | 4 | Systolic conducted out. | P.2 + | 100 | ” |
| 13 | W. B. | 6 | — | 3 m. | + | I.N. | 3 | Humming systolic. | — | 124 | ” |
| 14 | H. W. | 12 | — | 4 y. | + | 1 cm. O.N. | 5 | Systolic conducted out. | P.2 + | 90 | ” |
| 15 | J. L. | 8 | (b) 1922 (c) + | + | — | ” | 2 | ” | ” | 100 | ” |
| 16 | W. U. | 8½ | (b) 1923 | + | — | N.L. | 2 | ” | ” | 75 | ” |
| 17 | J. T. | 6½ | — | 2 y. | + | I.N. | 2 | ” | ” | 110 | ” |
| 18 | W. B. | 9 | — | 3 y. | + | ” | — | ” | ” | 86 | ” |
| 19 | R. E. | 9 | (b) + | + | — | N.L. | 3 | ” | ” | 84 | ” |
| 20 | H. P. | 11 | — | + | — | 1 cm. O.N. | 5 | ” | ” | 102 | ” |
| 21 | F. A. | 10 | (b) 1922 | + | — | N.L. | — | ” | ” | 130 | ” |
| 22 | F. C. | 13 | (a) 1919 | + | + | ” | 5 | ” | Rough P. systolic. | 90 | ” |
| 23 | M. P. | 5 | — | 9 m. | — | ” | 2½ | ” | P.2 + | 102 | T inverted in lead III. |
| 24 | E. P. | 10 | — | 1 y. | — | ” | 2 | ” | ” | 90 | Normal. |
| | | | | | | **3. MITRAL STENOSIS.** | | | | | |
| 25 | L. C. | 11 | F.A. 3 m. | + | + | 15/11/24 N.L. Heave and slap.<br>14/2/25 6 cm. O.N. slapping.<br>30/3/25 N.I. by percussion 3 cm. out. Slapping + +. | 3<br>5<br>5½ | Systolic conducted out. Short presystolic leading up to slapping 1st sound.<br>Systolic with thrill ringing presystolic.<br>Long diastolic and presystolic. No systolic. | — | 110 | Right-sided preponderance. |
| 26 | I. M. | 4½ | (c) + | + | — | 1 cm. O.N. | 2½ | Systolic conducted out. Rumbling diastolic. | — | 132 | Normal. |
| 27 | L. P. | 8 | (a) 1920 | + | — | 2 cm. O.N. | 3 | Systolic conducted out. Early diastolic. | — | 100 | ” |
| 28 | R. C. | 12 | — | 4 y. | — | 3 cm. O.N. | 8 | 1st + +. Ringing diastolic. Systolic conducted out. | P.2 + | 120 | ” |
| 29 | L. B. | 7 | (a) 1922 | + | — | N.L. | 2 | Systolic conducted out. Early diastolic. | ” | 86 | T wave : 1 mm. in lead II. : inverted in lead III. |
| 30 | D. P. | 12 | — | + | — | I.N. | — | Systolic conducted out. Early diastolic. | ” | 92 | Normal. |
| 31 | H. M. | 10 | — | 1 y. | — | 2 cm. O.N. | 3 | Systolic conducted out. Early diastolic and short presystolic. | — | 130 | ” |
| 32 | W. G. | 10 | (a) + | + | — | 1 cm. O.N. | 5 | 1st +. Early diastolic. | P.2 + | 90 | ” |
| 33 | R. S. | 7 | — | 6 m. | — | N.L. | — | Systolic and early diastolic. | — | 100 | T inverted in lead III. |
| 34 | K. K. | 9 | — | 1 y. | + | ” | 3 | ” | P.2 + | 94 | Normal. |
| 35 | B. F. | 6 | (b) 1 m. | + | — | I.N. | 3 | ” | ” | 76 | ” |
| 36 | F. W. | 9 | — | 6 m. | + | 2 cm. O.N. | 8 | ” | — | 92 | T inverted in lead III. |
| 37 | M. B. | 9 | (c) + | 4 m. | — | 1 cm. O.N. | 3 | ” | — | 98 | Normal. |
| 38 | F. W. | 10 | (b) + | 1 y. | — | ” | 4 | ” | P.2 + | 78 | ” |
| 39 | A. M. | 8 | — | 6 m. | — | 2 cm. O.N. | 3 | Harsh systolic. Early diastolic and presystolic. | ” | 120 | ” |
| 40 | L. P. | 13 | (a) 1924 | + | — | 3 cm. O.N. | — | Systolic and early diastolic. | — | 58 | ” |
| 41 | D. P. | 11 | (a) 1922 | + | + | 1 cm. O.N. | — | Diastolic and presystolic. | — | 94 | ” |

M. = months. Y. = years. T.R. = tonsils removed. F.A. = fainting attacks. N.L. = nipple line. O.N. = outside nipple. I.N. = internal to nipple. P.2 = pulmonary 2nd. A.D. = aortic diastolic.

*Remarks.*—CASE 11. Died four days later from pancarditis.

### 4. MITRAL AND AORTIC.

| Case. | Initials. | Age. | Evidence of rheumatism. | | | Cardiac signs. | | | | Electrocardiograph. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (a) Acute rheum.<br>(b) Chorea.<br>(c) Nodules. | Pains. | Tonsillitis. | Apex in cm. from nipple. | Right border in cm. from mid-sternum. | Sounds at apex. | Sounds at base. | Rate. | — |
| 42 | W. H. | 12 | — | 2 y. | — | 6th space N.L. | 3 | Systolic conducted out. Ringing diastolic. | A.D. | 128 | T absent in lead I. Early depression of T in leads II. and III. |
| 43 | R. M. | 12 | (b) 1920<br>(b) 1923 | + | + | 1 cm. O.N. | 3 | Diastolic and presystolic. | ,, | 76 | P.R. interval = 0·23 sec. |
| 44 | E. E. | 8 | (c) + | 6 m. | — | 29/11/24 1 cm. O.N. | 2 | Systolic conducted out. 1st reduplicated. | ,, | 100 | S wave = 7 mm. in lead III. Otherwise normal. |
| | | | | | | 17/2/25 3 cm. O.N. | 3 | Systolic conducted out. | ,, | 104 | |
| 45 | S. R. | 12 | — | 3 y. | — | 13 cm. left of mid-sternum. | 2 | Short systolic. | ,, | 140 | T inverted in leads II. and III. |
| 46 | E. M. | 11 | (b) 1924 | + | — | N.L. | 3½ | Systolic conducted out. Diastolic rumble. | ,, | 76 | Normal. |
| 47 | F. L. | 10 | — | 8 m. | — | 6th space 3 cm. O.N. | — | Systolic conducted out. Diastolic rumble. | ,, | 96 | ,, |
| 48 | T. S. | 14 | (b) 1923 | + | + | Heaving. I.N. | 4½ | Systolic conducted out. Diastolic rumble. | ,, | 100 | ,, |

### 5. ADHERENT PERICARDIUM.

| Case. | Initials. | Age. | (a) Acute rheum.<br>(b) Chorea.<br>(c) Nodules. | Pains. | Tonsillitis. | Apex in cm. from nipple. | Right border in cm. from mid-sternum. | Sounds at apex. | Sounds at base. | Rate. | — |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | C. M. | 10 | (c) + | + | — | Heaving + +. 6th space 6 cm. O.N. | 6 | Rough systolic conducted out. Diastolic. | — | 84 | Early depression of T in leads II. and III. |
| 50 | A. C. | 14 | (a) 1916 | + | — | 7th space 6½ cm. O.N. | 3 | Systolic conducted out. Diastolic rumble. | P.2 + | 86 | Normal. |

*Remarks.*—CASE 42. Died with pericarditis three months later. CASE 44. Between examinations had been in ward with subacute attack with pericarditis. CASE 49. Recurrent pericarditis during four years. Broadbent's sign positive. CASE 50. Broadbent's sign positive.

heart was not greatly enlarged, and there were signs of mitral regurgitation with some stenosis. Three months later the apex was 2½ inches further out, and the stenosis had progressed considerably. In another month and a half the apex had receded 1 inch, but was now formed entirely by the right ventricle; there was no evidence of mitral regurgitation—merely an advanced stenosis. The other, in whom the preponderance was less, had on the first examination no evidence of valvular disease; six weeks later she had signs of an early stenosis.

*Discussion.*

Pathologically, as Poynton and Paine [3] pointed out, the essential characteristic of rheumatic carditis is the Aschoff body. These inflammatory nodules can always be found microscopically in the myocardium, usually in the neighbourhood of the arterioles. They have a tendency to clear up, and indeed, at no time seem to exercise much effect on the function of the heart. Carey Coombs [4] notes that though they are found in numbers in the septum, yet heart-block in children is rare. He therefore postulates some toxic action on the metabolism of the muscle cells to account for the heart failure during the acute attack. In most cases the muscle recovers from this toxic action, and the patient has to face the risk of reinfection, and to meet the effects of the invasion on the valves which do not recover in the way the muscle does, owing probably to the poverty of their blood-supply.

Such a toxic action affecting the whole of the cardiac musculature could not be expected to influence the electrocardiographic curve, and one such case taken on the day of admission, four days before his death, showed a normal curve, with the exception of a tachycardia. It seemed, however, probable that recovery would often be incomplete, and that after the acute carditis had subsided the electrocardiograph might be able to differentiate between those cases in which, excluding the reinfection risk, the valve lesion was the only factor to be considered, and those in which an abnormality in the curve denoted some additional myocardial damage. In this series eight gave evidence of myocardial disease, so that out of the whole clinic 16 per cent. of the heart cases, or 6 per cent. of the total cases of rheumatism, were affected. The risk of reinfection cannot be assessed. Moreover, one child who was taken before and after a subacute attack with pericarditis, during which he had been in hospital, showed no alteration in the curve, although clinically he was in a considerably worse condition.

For the remainder of the cases the prognosis is dependent upon the valvular lesion. The dilatation and hypertrophy which take place during the active carditis stage appear not to be due to any valve lesion; they affect each ventricle and do not influence the electrocardiographic curve. When the myocardium is not permanently damaged this enlargement subsides to the point at which it is necessary to compensate for whatever valve lesions there may be. This compensatory hypertrophy was not sufficient in 94 per cent. of cases to cause one ventricle to preponderate over the other. One child with aortic disease showed a small amount of left-sided preponderance. Two with mitral disease showed a right-sided preponderance. In one case, in which the preponderance was great, the stenosis progressed rapidly.

*Summary.*

(a) Fifty children with evidence of active rheumatic carditis have been examined electrocardiographically. (b) Lengthening of the auriculo-ventricular conduction time was present in two cases. Impaired intraventricular conduction was present in one. (c) Abnormalities in the T wave in leads II. and III. occurred in five cases. (d) Extra-auricular systoles occurred in one. (e) Preponderance of one ventricle over the other was unusual; a right-sided preponderance appeared to have a bad prognosis.

We must express our thanks to Dr. M. A. Cassidy for placing his department at our disposal, and to Dr. R. C. Jewesbury for permission to use the clinical material.

*References.*—1. Parkinson, J., Gunson, E. B., and Gosse, A. H.: Quart. Med. Jour., 1920, xiii., 363. 2. Cohen, A. E., and Swift, H. F.: Jour. Exper. Med., 1923, l., 35, 39. 3. Poynton, F. J., and Paine, A.: Researches on Rheumatism. 4. Coombs, Carey F.: Rheumatic Heart Disease.

# Clinical and Laboratory Notes.

## A CASE OF
## CROSSED DYSTOPIA OF THE KIDNEY.

BY ALWYNE J. COMPTON, F.R.C.S. ENG.,
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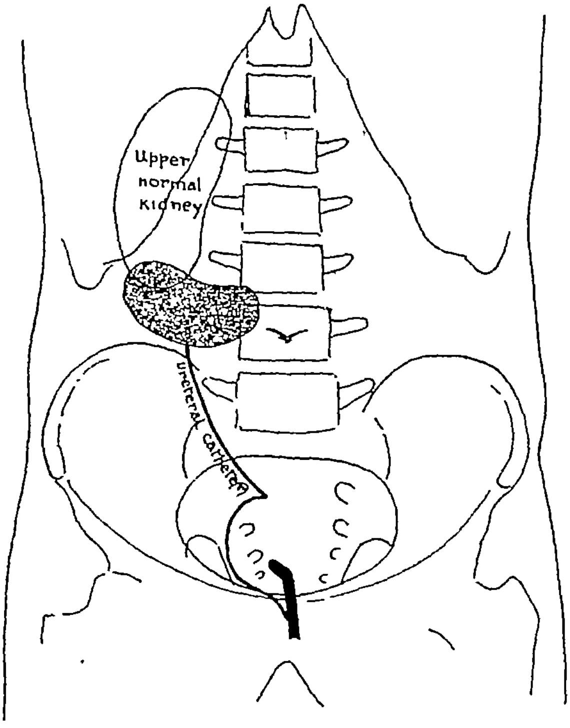
DURING the course of a laparotomy the following abnormality in the position of the kidneys was found.

L. H., male, aged 52 years. One kidney, normal in size, shape, and position, was found on the right side. A second kidney, about 3 in. long and 2 in. broad, lay obliquely, at a lower level and in front of the lower pole of the normal kidney; its hilum directed upwards and slightly to the left, its surfaces facing anteriorly and posteriorly, its long axis occupying the middle part of a line joining the umbilicus and the lowest part of the right tenth costal cartilage. The inner and somewhat lower pole reached to within an inch of the middle line, in front of the inferior vena cava. The convex margin of the kidney lay in the umbilical plane, and the outer and upper pole overlapped the lower pole of the normal kidney by about one inch. Both kidneys lay in the retro-peritoneal tissue, completely separate from each other, and neither of them showed abnormal mobility. There was nothing unusual about the stomach, duodenum, or colon. Owing to a considerable deposit of fat, neither the ureters nor the renal vessels could be made out definitely. No trace of any kidney could be found in the left loin or elsewhere on the left side.



No kidney shadow on the left side. Course of ureter shown as a thick line leading from the cystoscope to the lower of the two right-sided kidneys. The normal kidney is outlined, the lower one stippled.

*Cystoscopic Examination.*—The urethra was normal, also the mucous lining of the bladder. The latter was of normal capacity. A prolonged search revealed only one ureteric orifice on the right side. The right end of the plica ureterica was prominent and smooth and formed two well-marked folds, one above and the other below the ureteric opening. An opaque catheter was passed into the ureter and ran up without a hitch as far as the lower kidney. A skiagram was taken with the cystoscope and catheter in place and is shown in the accompanying tracing. On the left side the plica ureterica was ill-defined, and no ureteric opening could be found. A shallow pocket, which looked as if it might be the opening, contained a little calcareous material, easily dislodged with the end of the catheter. The pocket was less than a quarter of an inch deep, and no jets could be seen coming out of it.

Apart from gall-stones, on account of which the operation was done, no other abnormality was discovered when the patient was examined.

## TWO CASES OF
## LESION OF THE PONS VAROLII OCCURRING UNDER GENERAL ANÆSTHESIA.

BY W. J. MCCARDIE, M.B., B.CH. CAMB.,
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AND
H. W. FEATHERSTONE, M.D., B.CH. CAMB.,
HONORARY ANÆSTHETIST TO THE HOSPITAL.

BY a coincidence the two patients, whose cases are here recorded, died within an hour of one another. They had been anæsthetised in the same theatre, and the symptoms presented by each patient, though of rare ocurrence, strongly resembled those of the other. As ether from the same batch had been employed, it was at first subjected to criticism, but the post-mortem findings, coupled with the absence of bad symptoms in other patients, have, we think, exonerated the ether.

### *The First Case.*

*Thrombosis of the Basilar Arteries during an Operation for Advanced Carcinoma of the Breast.* (By Dr. McCardie).—A woman, aged 60, suffering from cancer of the breast, was brought to the anæsthetic room at the General Hospital on Sept. 30th, 1925, for operation, at which the breast and axillary contents, which included one or two enlarged glands, were removed by Mr. Leonard Gamgee. Examination previous to operation had shown no evidence of secondary deposits. The patient was rather fat, but appeared to be in fair condition, and nothing specially abnormal was found in the lungs or the heart, except that the cardiac impulse was rather weak. The urine did not contain casts, blood, or tubercle bacilli, but there was a little pus. She said she had nasal obstruction, also a cold and an occasional cough. 1/100 gr. atropine was injected half an hour before operation, but no other drugs were given. $E_2C_1$ mixture of chloroform and ether, aided by a little ethyl chloride, was administered on an open mask, and induction being quiet and particularly rapid, anæsthesia was maintained throughout by the $E_2C_1$ mixture.

Her condition was quite good for about 25 minutes; anæsthesia was then fairly deep, the eyelids being half open and the corneal reflex nearly absent, but the pupils were fully contracted. At this point respiration, which had always been very quiet, stopped rather suddenly, although the pulse remained of fair quality and the colour good. Her tongue was pulled out and her chest was compressed a few times, the colour changed a little for the worse for a minute or so, and then respiration quickly reappeared. The operation was not interrupted. Her pupils still remained very small. The operation was finished and the patient sent back to bed apparently in fair condition. Nevertheless, she did not recover consciousness, but remained in coma. Gradually her breathing became stertorous, and her pupils pin-point in size. The coma deepened and death occurred 20 hours after completion of the operation. The temperature, which was 98·6° F. in the evening, gradually rose to 106° just before death. At the time of the operation I ascribed the unusual symptoms to toxæmia, probably of cancerous origin.

At the *post-mortem examination*, performed by Prof. Haswell Wilson, the following notes were made: Pathological summary: Carcinoma of the breast; generalised dissemination; cerebral softening. Heart: 350 g. Extreme degree fatty infiltration, especially on the right side. Slight atheroma of the coronary arteries. Lungs: Atrophied. Hilum and lower lobe of right lung showed large mass of tumour growth, which had eroded the pulmonary vein in one place. There was a mass of mediastinal glands infiltrated by tumour growth. Liver: 1300 g. Fatty degeneration and infiltration. Numerous small metastases throughout substance and on surface. Gall-bladder: A necrotic mass resembling tumour growth was found at the tip. Kidneys: Pale and fatty. Spleen: Atrophied and fibrous. Suprarenals: The left showed metastases of growth with hæmorrhage. Small nodule in right organ. Mesenteric glands:

They were hard and were infiltrated with tumour growth resulting in thrombosis of some vessels in the mesentery. Stomach: Several fungating metastases of tumour growth were discovered on opening the stomach along the lesser curvature. Brain: Thrombosis of the basilar arteries and of the Sylvian arteries. Multiple metastases in the cortex. Several old root softenings were found. A more recent hæmorrhage was discovered in the right half of the cerebellum.

The case, then, was one of acute dissemination of very widely spread cancer. Such patients are toxic, and stop breathing very easily. The arterial thrombosis would explain the coma, stertor, and pin-point pupils. It is difficult to prove when exactly thrombosis commenced, but, judging from the size of the pupils, it appears likely that the pons was injured shortly before respiration ceased temporarily. It is possible that the slowing of the circulation from exhaustion led to the clotting of blood, which initiated the chain of events leading to the fatal issue.

### *The Second Case.*

Instances of restoration of the heart-beat by direct cardiac massage, in patients who have collapsed when under the influence of chloroform, are by no means rare. Unfortunately, death usually follows a few hours later, and the case to which I draw attention is not an exception to this rule. Nevertheless, in several respects, this is an unusual case from which useful inferences may be drawn.

*An Unusual Case of Temporary Recovery of Respiration and Heart-beat in a Patient who apparently had Died under Anæsthesia, with a Fatal Sequel due to Associated Pontine Injury.* (By Dr. Featherstone.)—The patient, J. H., a well-developed man of 48 years, had suffered from indigestion for three weeks. On Sept. 30th, 1925, at 9.30 P.M., a duodenal ulcer perforated and the doctor who was summoned sent the patient to the Birmingham General Hospital without administering any opium or morphia. Laparotomy was performed at 5.35 A.M. by Mr. W. S. Adams, the resident surgical officer, to whom I am indebted for the notes of the operation. Thus there was an interval of about eight hours between the perforation of the ulcer and the operation.

When anæsthesia was commenced by one of the house surgeons the patient's general condition was quite good, although he was much distressed by the pain, and the abdomen was rigid. A chloroform-ether mixture, $E_2O_1$ preceded by atropine 1/100 gr. and no other drug, was employed for induction, and the patient struggled vigorously for nearly four minutes. Anæsthesia was continued with ether by the open method, but, although respiration was unobstructed and oxygen was given, the colour was inclined to be cyanotic. There was a small amount of mucous secretion. The surgeon found a pin-hole perforation of the duodenum, close to the pylorus, with free fluid and some flakes of lymph. As the pulse was weak and the anæsthetist was not satisfied with the man's condition, the surgeon contented himself with suturing the perforation without performing a gastroenterostomy.

After anæsthesia had lasted for about 20 minutes, while the surgeon was completing the duodenal suture, the colour improved considerably. There was only a light degree of anæsthesia. Tubes were inserted to the pelvis through a suprapubic stab, and to the right kidney pouch. The peritoneum had been sutured halfway along when the respiration became jerky. Anæsthesia was still light and the peritoneal suture was completed, and four deep silk-worm gut sutures were inserted. At this point the patient ceased to breathe. The colour was pink, although the pulse could not be felt at the wrist. Compression of the chest showed that the air-way was clear, and, while artificial respiration was continued, the wound was reopened. No cardiac impulse could be felt through the diaphragm. Cardiac massage, both through the diaphragm and afterwards by fingers inserted directly into the pericardium, did not elicit any response.

Two or three minutes after the heart had stopped 1 c.cm. of adrenalin was injected into the right ventricle without effect. Artificial respiration and cardiac massage were continued for three or four minutes, and then a second injection of 1 c.cm. of adrenalin was made as before. About 10–15 seconds after the second injection the heart commenced to beat. The impulses were weak at first, but after about ten systoles the contractions were of good force and the tone of the heart muscle was firm. Thus the heart had stopped for nearly ten minutes. Artificial respiration was continued without effect until a big stertorous inspiration occurred one hour after the heart had re-started. In the next ten minutes the patient took about a dozen voluntary breaths, and then breaths came at gradually diminishing intervals, until normal respiration was established about 20 minutes after the first voluntary response. The abdomen was closed by "through-and-through" sutures. During the state of apnœa the pulse-rate was 120 per minute, the pupils were half dilated, and the corneal reflex was absent. After the return of voluntary respiration the pupils gradually contracted until the patient left the theatre, but they were not at that time "pin-point." On the patient's return to the ward at 7.50 A.M., continuous rectal salines, the foot of the bed on chairs, and other restorative measures were instituted.

I saw the patient at 10.15 A.M., at the request of a surgical colleague, who suggested, as a first impression, that the condition of the patient resembled morphine poisoning. At that time both pupils were "pin-point," and there was a divergent squint, the left pupil being turned to the left. The breathing was stertorous, 36 per minute. The pulse was vigorous, 112 per minute, and the blood pressure reading was: systolic 160 mm., diastolic 75 mm. There was general muscular rigidity and hyper-excitability. Both knee-jerks were absent. The temperature was rising —viz., at 9 A.M. = 100° F.; at 10 A.M. = 102°; and (to anticipate) at noon = 103·4°; and at 1 P.M. = 101·1° (compare Dr. McCardie's case).

It was ascertained that no morphia had been given, and in view of the pin-point pupils, the stertorous breathing, the high blood pressure, and the rising body temperature, a diagnosis of hæmorrhage in the neighbourhood of the pons varolii was made. So striking were the symptoms that several surgical and medical members of the staff were asked to see the case and general agreement with this opinion was expressed. Furthermore, it appeared possible that the hæmorrhage had taken place as the result of the prolonged struggling during induction of anæsthesia. One of the physicians to the hospital tentatively put forward the suggestion that thrombosis during the arrest of the heart might have led to a small embolism in the pons, followed by extravasation of blood from the damaged vessels. The patient died at 1.45 P.M., about five and a half hours after restoration of respiration.

At the *post mortem examination*, performed by Prof. Wilson, the brain was found to be œdematous, and there was extreme congestion of the vessels in the region of the pons, especially round the floor of the Sylvian aqueduct; but there was no sign of embolism or hæmorrhage. The other organs were healthy, with the exception of the duodenal ulcers and general congestion of all the viscera. It was considered that the appearance of the pons varolii was compatible with the symptoms observed and with the fatal issue, but that histologically it would not be possible to demonstrate gross damage to the nervous tissues owing to the post-mortem changes in the 21-hour interval between death and autopsy.

The following points appear to be of special interest: (1) The cessation of heart-beat and respiration in a patient of fair general condition while under open-ether anæsthesia. (2) The restoration of the heart-beat by direct cardiac massage, with intracardiac adrenalin as an important factor. (3) The return of respiration after apnœa which had persisted for not less than 75 minutes. (4) The patient's general resemblance to a case of cerebral hæmorrhage or fracture of the skull, such as one is accustomed to see in the accident wards. (5) It may be concluded, with some justification, that stoppage of the circulation in the brain for ten minutes had led to irreparable damage to the pons and medulla. If we accept this as the explanation of the fatal issue which is so frequently the early sequel in cases of restoration of the heart-beat by cardiac massage, we shall be emboldened, when we find the heart has ceased to beat during anæsthesia, to undertake cardiac massage without any delay.

We have to thank Mr. Leonard Gamgee and Mr. Seymour Barling, the surgeons in charge of these cases, for their kind permission to record them.

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HOSPITALS AND MOTOR ACCIDENTS.—It was stated at the annual meeting of Leeds General Infirmary that last year 768 victims of motor accidents were treated, and that, although the lives of many of these patients were saved, their contributions were "exceedingly small." Much the same story is told in the annual report of the Victoria Infirmary, Newcastle-upon-Tyne. There 595 injured persons were treated, of whom nearly one-half were retained as in-patients.

# Medical Societies.

## ROYAL ACADEMY OF MEDICINE IN IRELAND.

### SECTION OF SURGERY.

At a meeting of this Section held on March 26th Mr. R. C. B. Maunsell, the President, took the chair, and Dr. Maurice Hayes opened a discussion on

*The X Ray Treatment of Exophthalmic Goitre.*

He reviewed the results of radiotherapy in 100 cases of Graves's disease (90 females and 10 males) treated by him during the last 15 years. Sixty-two patients who completed the course of treatment were cured and able to follow their usual occupations. Fourteen were improved; they comprised eight who left off treatment before they were finally discharged, and six who were still under treatment. Sixteen abandoned treatment for various occupational reasons. The ultimate results of eight cases were unknown. There was recurrence in two cases; in one of them it followed encephalitis lethargica, and in the other it followed influenza. Four of the patients in the series had had previous operation. Three underwent operation shortly after the commencement of X ray treatment; one of these died, and another had a toxic adenoma. X ray treatment was given daily or on alternate days for a period of three weeks. After a month's interval this was repeated. Two or three series of applications were usually sufficient.

Dr. Hayes remarked that statistics of the surgical treatment of exophthalmic goitre were copious and reliable, whilst those of treatment by radiation were as yet incomplete; but a comparison of the results indicated that X ray treatment would probably furnish about the same percentage of permanent cures as surgical treatment in the best hands. The advantages of X rays were: (1) there was no mortality resulting from the treatment; (2) patients would submit to it more readily than to operation; (3) it was applicable to inoperable and post-operative cases. It had the disadvantage, on the other hand, that the treatment was prolonged and that there was a risk of atrophic changes and telangiectases in the irradiated skin. There was ample clinical evidence from the amelioration which followed radiotherapy to justify its employment on rational grounds as a most useful adjunct in the treatment of Graves's disease.

Dr. T. G. Hardman said that he was an enthusiastic advocate of X ray treatment in exophthalmic goitre. In June, 1925, he had been able to collect about 60 cases, and follow their course for several years back. On the whole, he thought, the results were very satisfactory. Over 75 per cent. of the patients were cured of their symptoms, 22 per cent. were greatly improved, and the rest were slightly improved. There had been no deaths. Some of his cases he had been unable to trace, but he had since learned that two of them had been successfully treated by operation. He thought that too much emphasis could not be laid on the fact that radiologists only advocated the use of X rays as part of medical treatment. The success of radiotherapy depended very largely on the strictness of the medical régime. The cases which did best were those which were treated in private, where they could have the absolute rest and regulated life which were so essential. Greer, of America, divided hyperthyroid cases into four groups: (1) those with simple hyperthyroidism, in which he claimed to get 100 per cent. cures; (2) those with acute exophthalmic goitre, in which he claimed to get almost miraculous results; (3) those with chronic exophthalmic goitre, in which treatment was much more difficult (cases which came for treatment within 6 or 12 months of the development of symptoms did well, but if they came later they were much more difficult to treat and more likely to relapse); (4) cases of ordinary goitre, in which he advocated surgical treatment altogether. In X ray treatment there was no immediate mortality; the treatment was easy to carry out, and there was no scarring such as was found after operation. If it was unsuccessful, it did not prevent patients from being operated on afterwards, although some surgeons said that operation was made more difficult by the formation of fibrous tissue as a result of radiotherapy. He personally thought that every patient should be given a chance of X ray treatment before being submitted to the risk of operation—however small this might be.

Prof. J. M. O'Connor said that undoubtedly the thyroid gland had its use and significance in the body, but it was very hard to say what its use was. It had been thought at one time that exophthalmic goitre was due to an excess of adrenalin in the blood, but this idea had been proved wrong. The estimation of basal metabolism seemed to him a very heavy weapon to use for examination of a disease which could be examined by much more simple methods.

Mr. H. Stokes said that he did not think statistics of much value in discussing the treatment of exophthalmic goitre, because it had only recently been recognised that there were two varieties of the disease—toxic adenoma and Graves's disease. The mortality in toxic adenoma was just as high as ever, but with the use of iodine in Graves's disease the mortality had come down to 2 per cent. The accounts of treatment at the American clinics gave the impression that patients were admitted in a very grave condition, were given iodine for three or four days, were then operated on, got up within a week, and within a fortnight were able to leave the clinics and go back to work and lead a normal life. He had operated on three cases of Graves's disease recently, and in one case, after three months, the patient had been able to return to work and was now perfectly well. There were undoubtedly cases of well-marked exophthalmic goitre which got well in a remarkably short time, but they were apparently a mixture of toxic adenoma and Graves's disease.

Prof. T. G. Moorhead said that before it was possible to estimate the value of any treatment in any disease, it was necessary to know what was the natural course of that disease without treatment, or (in the present case at any rate) when treated only by the simplest medical methods such as rest and sedatives. Information on this point was very scanty. No reliable figures existed showing the actual mortality incidence. Campbell, in a paper communicated to the Association of Physicians a couple of years ago, had determined the death-rate throughout Great Britain and Ireland, and estimated that roughly ten persons per million living died of exophthalmic goitre annually, though there was considerable variation in different districts. In 1922, 22 deaths had been recorded in the Free State; in 1923 there were 18 deaths. It was worth noting that 24 of these 40 deaths occurred in people over 40 years of age, from which it might perhaps be deduced that death usually followed many years of illness, since most cases of Graves's disease were encountered in the earlier years of life. The Free State figures worked out at roughly seven deaths per million living. Quite plainly, however, none of these figures gave any information about the number of deaths in proportion to the number of people who suffered from the disease. Marion Read, who observed 100 cases over a period of about six years, reported altogether six deaths, and four of these immediately followed surgical treatment. From these scanty figures it appeared that the medical death-rate was, at any rate, not high. It was equally difficult to get reliable figures about recovery from the disease. It was common knowledge that many cases recovered completely without any treatment, and that, on the other hand, many drifted on as chronic invalids. The general opinion was that about 50 per cent. of recoveries might be expected, and any treatment that did not improve on that figure might be regarded as of no value. Kessell, of New York, indeed, stated that in 82 per cent. of cases observed by him, economic recovery occurred in from four to six months, without any special treatment; but he admitted that many of his recovered patients still suffered from considerable disability, and few would agree with his statement that practically all cases tend to recover if left alone.

In considering surgical treatment, said Prof. Moorhead, it was necessary to distinguish between immediate and remote results. The immediate mortality in some clinics was very low; in the Mayo Clinic and in Cleveland the mortality was only about 1 per cent. On the other hand, Kessell and Hyman reported an operative mortality of 9·3 per cent. in a group of cases collected from various clinics, and Marion Read, in a small number of cases, found a mortality as high as 31 per cent. From this it was clear that, although surgery under special conditions was comparatively safe, it was by no means a treatment to be universally adopted. The ultimate results following operation were very difficult to arrive at. Some surgeons led people to believe that their cases were completely cured in a month or so after operation; but Marion Read, reporting on 25 cases followed for from three to five years after operation, described only two as cured and nine as improved. Twenty-five cases was a very small number on which to base any statements, but the conclusions derived some importance from the fact that the cases were definitely followed up and a description was given of their condition some years after operation.

Speaking of X ray treatment, Prof. Moorhead said that he felt very enthusiastic. In a series of 51 private cases which he had reported in June, 1925, he had been able to follow up 44. Of these, two definitely did badly, showing no response to treatment, and one died of influenzal pneumonia; but there were 34 complete cures, and seven other patients were very much improved. That is to say, there were 77 per cent. of cures and 15 per cent. were improved—a total of 92 per cent. good results. These figures supported those given by Dr. Hayes, and pointed strongly to a combination of medical and X ray treatment as giving the best possible results—results, moreover, unattended by any danger. In treating cases in this way he had found that acute cases did much better than milder and more chronic cases, and that private patients, on the whole, did better than those in hospital. Details of treatment were extremely important. The patient should remain in bed, on a restricted protein diet for the first month, and sedatives should be given as required, quinine bromide being particularly useful. As regards the application of X rays a double course was all important, and he advised two periods of treatment, each of about three weeks duration, with an interval of a month between the two; the thymic region should be irradiated as well as the thyroid. Of late he had been using lugol solution as an addendum to his treatment. It was customary to say that iodine was of particular value in preparing patients for operation. That was doubtless true, but it was also of value, he thought, in hastening recovery by means of X rays. When iodine was used the pulse-rate came down more rapidly than otherwise, and the thyroid gland soon became harder. In most cases the patients were practically well within six months of the beginning of treatment; and by well he meant completely well—that is, they had gained weight, had a normal pulse-rate, no tremor, no sweating, and were free from nervousness. Traces of goitre often persisted, and often some exophthalmos; but these were unimportant when other symptoms were absent. All his cases claimed as cures were able to lead normal lives and were without disability.

Dr. H. F. **Moore** commented on how little was known of the actual physiology of the thyroid gland, and hoped that the discovery of thyroxin would prove a stimulus to renewed physiological research. The pathology of the gland was in an even worse state of confusion; as a classification of types of enlargement, he thought Aschoff's the most suitable. He summarised recent advances in knowledge of thyroid function, speaking particularly of Kendall's work on the thyroxin molecule and its physiological properties. The effect of iodine in hyperthyroidism was of great interest, and any evaluation of treatment should be controlled by clinical observation and estimation of the basal metabolic rate. His cases were all treated under such control by general treatment, iodine, and X rays, but he did not hesitate to have recourse to surgical treatment where he thought it necessary.

Sir **William de C. Wheeler** said that the literature of exophthalmic goitre had become quite unwieldy. In the surgery of the disease Albert Kocher had been the great pioneer. Of the cases treated between the years 1883 and 1889 Kocher stated that 76 per cent. were cured, and that the mortality was 6·7 per cent. In 1910 the mortality in Kocher's clinic had been reduced to 4·5 per cent. During the last 15 years immense strides had been made in surgical treatment, which had brought the mortality in the clinics of Mayo and Crile down to about 1 per cent. The mortality following operation for toxic adenoma was much higher—about 3·5 per cent. The results of surgical operation could be accurately estimated, but the ultimate mortality from failure of medical treatment was difficult to ascertain. Sir William Wheeler said that he had referred to the records of 76 thyroid cases operated upon since 1910, but did not consider his statistics accurate because there was confusion between some of the cases of toxic and non-toxic goitre in the hospital records. He had had two deaths from true Graves's disease during this period. One of them was from acute hyperthyroidism in the days before iodine was administered as part of the pre-operative preparation, and the other was due to mechanical difficulties in breathing following an extensive operation. Recent technique had eliminated this danger. In nearly all of the cases operated on by him medical treatment and radiotherapy had been tried first; but it was quite possible that a number of them had not submitted faithfully to the directions of the physicians. Operations were not shirked in any instance because the disease was advanced and the patients were grave surgical risks, but in such cases the operative procedures were very carefully graded. He emphasised the fact that Graves's disease was a disease of cycles; that the stage of development was followed by one of maximum intensity, and that then there was retrogression and remission. In the quiescent period operation was comparatively safe, but during a crisis operation should never be done. He was struck by the dramatic improvement which sometimes followed a few days after operation. The statistics given in the literature were often faulty owing to the comparison between inefficient surgery and efficient medicine, or efficient surgery and inefficient medicine. To obtain anything like accurate information, the statistics of the best authorities, surgical, medical, and radiological, should be balanced. If this were done it would be found that the honours were easy. In most cases a combination of methods was desirable. Lugol solution was an immense help in preparing patients for operation and it would control post-operative remissions. About 5 per cent. of patients did not react to the administration of iodine.

Dr. R. **Stumpf** said that it was found that if cases considered most favourable for operation received a preliminary X ray treatment about a fortnight beforehand, the operative risk was lessened. He reviewed a series of cases of which the majority were treated by X rays alone, in 90 per cent. of which there was either cure or great improvement; if there was no improvement after several irradiations, then operation was done. He had found that ill-effects were more likely to occur after the use of superficial rays than with deep rays. Cases had been known in which adhesions were found at operation although the patients had never been X rayed, and he felt that their presence should not be considered an insurmountable barrier to operation. He always irradiated the thymic region, even when no gland was present, and in cases of simple goitre he always preferred X ray treatment to operation, even in juvenile cases. He had seen several cases of simple goitre in which the tumour had entirely disappeared.

Mr. A. CHANCE referred to the special circumstances of patients of the hospital class, which often prevented adequate medical or X ray treatment. It was in these cases, he felt, that operative treatment showed to advantage. The object of X ray or surgical treatment was to destroy a certain portion of the thyroid gland, and, if this could be done safely, it was desirable, because it could certainly be done more speedily by surgical means than by any other. It was unquestionable that in certain clinics where these cases were handled by one team, as in the Mayo and Crile clinics, the mortality was in the region of 1 per cent.

Dr. M. F. O'HEA had treated a large number of cases of exophthalmic goitre by X rays and thought that his results were roughly about 75 per cent. of cures. Referring to the condition of patients after treatment, he said that after the first treatment there seemed to be an exacerbation of symptoms; but this, he thought, was the result of fright rather than of the treatment itself.

Dr. W. C. STEVENSON said that for a long time now he had not used superficial rays in cases of exophthalmic goitre, because these rays did not affect the pathological cells which were found in exophthalmic goitre. If deep X rays were given it was impossible for the cells to escape some effect; these rays tended either to destroy the cells altogether or to stimulate them to return to a more normal condition. The fibrous tissue which was produced by X rays was not the cause of the cure but the result of it. Deep X rays were also more efficient because they penetrated deeper. In some cases radium had an advantage over X rays, for in cases where very slight but very continuous stimulation was required this could be given better by radium than by X rays.

Mr. W. PEARSON said that he had not found that X ray treatment made operation any more difficult. Fibrosis was produced, but it was in the stroma of the gland itself, and made no difference as far as operation was concerned. He, personally, had never had any difficulty in getting the thyroid gland out cleanly and bloodlessly in cases in which there had been fairly extensive X ray treatment.

Dr. HAYES, replying, referred to the possible rôle which thyroxin played in exophthalmic goitre. If antecedent X ray treatment really caused adhesions and rendered operation more difficult, this was a thing which radiologists should definitely try to improve. He did not think that X ray treatment alone would cure exophthalmic goitre, and the more he saw of the condition, the more convinced he was that a radiologist would not cure a case unless he was also a physician, and a good physician. The most essential part of the treatment was the medical régime.

## EDINBURGH OBSTETRICAL SOCIETY.

AT a meeting of this Society held on March 10th, Dr. R. W. JOHNSTONE, the President, in the chair, Dr. WILLIAM FORDYCE gave a short note on a case of

### *Ectopic Gestation with Unusual Clinical Features.*

The patient, a multipara of 36 years, was admitted into his ward with a history of severe vaginal hæmorrhage following what was supposed to have been an incomplete abortion, as she had three weeks previously passed a lump per vaginum as big as her closed fist. This was corroborated by her medical attendant. After her admission she was examined under chloroform and the os was found to be patulous, but nothing was found inside the uterus, although there was a somewhat foul-smelling discharge. The patient progressed satisfactorily for a week; there was no further discharge and the temperature remained normal. She then began to complain of colicky pain in the right hypochondrium and became slightly jaundiced. Cholecystitis was diagnosed and a laparotomy was performed two weeks after her admission to hospital. The abdomen was found to be full of bright red blood and a fœtus was found later amongst the clots. In all probability the sac had been ruptured by bimanual palpation immediately before operation.

In reviewing the case Dr. Fordyce said that he thought it must be classed as a "combined" gestation (both intra- and extra-uterine), for on examination on admission, though she was very stout, there was nothing like an ectopic gestation to be palpated, and yet before her operation a swelling could be felt distinctly. The pain and tenderness in the right hypochondrium was very difficult to explain.

Prof. CARLTON OLDFIELD (Leeds) read a communication on

### *Symptoms without Signs.*

This title, he said, was chosen because there was no more common case than the patient who complained of symptoms, but in whom no physical signs could be detected. Out of 1200 patients examined by Prof. Oldfield only 434 (36 per cent.) showed any gross disease, and this he deemed to be due to the majority of cases being functional. The usual symptoms in such functional cases were headache, backache, weariness, sleeplessness, and frequency, precipitancy or incontinence of urine. For such conditions curettage was unnecessary and harmful, as also were operations such as ventrosuspension, cervical repair, and appendicectomy. Backache was found in 67 per cent. of all Prof. Oldfield's cases, but in only 34 per cent. of these was any organic disease present. Retroflexion was present in only a few more cases than anteflexion, which confirmed the opinion that retroflexion, though often accompanying backache, was not the cause of it. Cervicitis (with or without laceration) and endometritis were not noted as being in any way definitely associated with backache; though, as all these complaints were common, they were bound to occur together in many cases. Backache, therefore, was usually a functional complaint. Incontinence of urine was then discussed, the incontinence being of the active kind and not passive as in a vesico-vaginal fistula. In 12·8 per cent. of Prof. Oldfield's cases there was incontinence, and yet 29 per cent. had urethrocele; among the cases of incontinence 28 per cent. had urethrocele and 28 per cent. prolapse. Prolapse was present in more cases with incontinence of urine than without, and therefore was probably a causal factor, though only 7 per cent. had cystocele; but urethrocele, on the other hand, occurred more frequently in cases without incontinence. Incontinence was, he considered, purely functional, which was proved to his satisfaction by the fact that application under anæsthesia of the electrocautery cured nearly every case. This would have been impossible if it were due to pathological or anatomical reasons, as was generally supposed. Speaking of retroversion of the uterus, Prof. Oldfield quoted the statistics of Dr. MacGregor Young. 1000 puerperal uteri were examined on the twelfth day after labour and retroversion was found in 50 cases, but six months later only two were found to be still retroverted. Pessaries might relieve symptoms sometimes, but it was probable that prolapse was present in such cases. He advised that the words retroflexion and retroversion should be discarded; pessaries would then cease to be used or operations to be done in such cases. Many women were made unhappy by being told that their womb was twisted. In conclusion he touched on the pernicious vomiting of pregnancy, which he considered always to be functional; he advised treatment by suggestion and feeding, which in his experience had always been successful.

Dr. F. J. BROWNE read a paper on an experimental investigation into

### *The Ætiology of Accidental Hæmorrhage and Placental Infarction.*

After briefly discussing the various views held on the cause of accidental hæmorrhage and the relationship between it and toxæmia, nephritis, and liver changes, he described the origin of the present research. In

1923, during an experimental investigation into the paths of intranatal infection in the newly born infant, a rabbit (20 days pregnant) was injected with an emulsion of *B. pyocyaneus* in saline. It was found six hours later to be bleeding profusely from the vagina. Under ether anæsthesia the abdomen was opened and a large retroplacental hæmatoma was discovered, entirely, or almost entirely, separating the placenta from its attachment. On microscopic examination an acute nephritis was found affecting the glomeruli and convoluted tubules. Attempts were made to reproduce this result on 34 subsequent occasions, but without definite result. Some factor essential for success was evidently missing. From clinical observation of patients Dr. Browne was impressed by the frequency with which in cases of accidental hæmorrhage he could obtain a history pointing to chronic nephritis. In one case of concealed hæmorrhage there was no doubt about the presence of chronic nephritis, as albuminuria had been present with accidental hæmorrhage in the previous pregnancy. The patient had been followed up in the interval between that and her next pregnancy and it was found that the albuminuria had persisted. In this pregnancy albuminuria was present from the start and at the seventh month she was admitted to hospital with a concealed hæmorrhage. Dr. Browne therefore believed that if he could set up a chronic nephritis and introduce *B. pyocyaneus* in the pregnant rabbit so suffering he should be able to produce accidental hæmorrhage. In order to cause chronic nephritis sodium oxalate was used in 1 per cent. solution according to the method described in 1924 by Shaw Dunn, Haworth, and Jones.

Thirty-five rabbits were treated during three months by injecting them intravenously with the oxalate at frequent but varying intervals. The blood-urea was regularly examined and the rise of blood-urea was taken as the clinical index of the onset and duration of nephritis. Eight rabbits died during the experiment, and histological examination of the kidneys revealed an acute nephritis chiefly affecting the convoluted tubules. In animals that had been under treatment for eight weeks or more a very well marked interstitial nephritis was found as well. After three months' oxalate treatment the remaining rabbits were mated, and at the twentieth day of pregnancy a small dose of sodium-oxalate was again given. Next day the blood-urea was examined and a small dose of emulsion of *B. pyocyaneus* in saline was given intravenously. This experiment was tried in six cases in succession and in all of them it was successful; more or less profuse hæmorrhage started within a few hours of the injection. After bleeding had continued for some time the rabbit was killed by chloroform and the condition of the uterus and placenta examined. All the placentas (seven in number) showed typical red infarcts exactly resembling those found in the human subject in cases of albuminuria. In one of the placentas there was a large clot between the membranes and the cornual wall, while there had been several profuse external hæmorrhages. There had therefore been produced accidental hæmorrhage, external and concealed, with hæmorrhage in the uterine muscle and infarction. These conditions, singly or in combination, could be produced at will and this particular experiment was therefore discontinued.

Dr. Browne also described other experiments that had been carried out since. These had shown: (1) That the dose of oxalate at the twentieth day of pregnancy was unnecessary, for bleeding could be produced by injecting *B. pyocyaneus* alone, provided the kidney had been previously damaged by injecting oxalate over a prolonged period causing a chronic nephritis. The mere injection of *B. pyocyaneus* was now sufficient to bring about an acute exacerbation of the nephritis, as shown by rise in blood-urea, and lead to hæmorrhage. (2) A previously existing chronic nephritis was unnecessary, for if an acute oxalate nephritis were produced and organisms then introduced bleeding occurred. These two alternative methods seemed, however, to be somewhat less certain than the method first adopted. (3) The coliform group of organisms seemed to be the most potent in causing a positive result. (4) In every case in which hæmorrhage had so far occurred, if a chronic nephritis were previously existing, an acute or subacute exacerbation of the nephritis preceded the bleeding.

## BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on April 1st, Mr. H. J. WALKER, the President, in the chair, Dr. JAMES MENNELL read a paper on

### *The Principles and Practice of Manipulative Surgery.*

He drew attention to the dictum quoted by Wharton Hood as being always in the mouth of Hutton, that "the twist is the thing." In all joints, he said, with the exception of the hip-joint, it was possible to perform some movement not under the voluntary control of the patient. The most conspicuous movement of this type was that which resulted on the application of tension; and it was often useful to perform those movements as a preliminary to carrying out the normal movements of the joint. Manipulative treatment had suffered a set-back owing to the too rigid adherence to Hilton's teaching of rest and pain. The mistake had been made in the past of failing to realise the essential difference between movement and function, a distinction so ably drawn in the work of Lucas-Championnière. Dr. Mennell put in a claim for the more general recognition of the osteopathic definition of a lesion, which he quoted as being "the immobilisation of a joint in a position of normal movement," the immobilisation being due to: (1) locking within a joint, without actual displacement, or the formation of adhesions; (2) definite adhesions within the joint; (3) adhesions in the soft tissues around the joint; (4) adhesions in the extra-articular structures; (5) adaptive shortening in the elastic tissue of the muscles which control the movements of the joints; or (6) hysteria. He drew particular attention to the danger of putting a joint through its full range of anatomical movement when limitation of movement was marked and of long standing. In these cases it was merely desirable to pass the first dead point, and then to allow the patient to regain the increased freedom of movement before an attempt was made to gain a yet wider range as the result of subsequent manipulation. After-treatment was also essential. Dr. Mennell ended his paper with a plea for more scientific consideration of lesions of joints of the back, condemning the practice of readily dubbing every aching back as neurasthenic instead of trying to form an accurate diagnosis of the physical lesions present, and giving them appropriate treatment. He then gave a demonstration of the manipulation applicable to various joints.

Dr. H. M. GALT showed microscopical slides.

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ROYAL INSTITUTION.—On Tuesday, April 20th, at 5 15 P.M., Prof. J. Barcroft will lecture on the Spleen.

BOSTON CITY HOSPITAL.—The report of this great American hospital for the year ending Jan. 31st, 1925, which has just been issued, shows that the total expenditure exceeded £337,000, and that the daily cost of in patients was 15s. per head. The very large new out-patients' department contains a great number of small examining rooms, "self-respecting citizens who are compelled to resort to a hospital clinic being entitled to the same privacy that they would have if treated in a physician's office" Each of these rooms contains a lavatory basin, and, it is added, "the physician is expected to wash his hands after the examination of each patient"

PAPWORTH TUBERCULOSIS COLONY.—This valuable and successful colony has just celebrated its tenth anniversary. A beginning was made at Bourn, in Cambridgeshire, with 12 patients; there are now more than 200, and in the village settlement connected with Papworth Hall 70 or more settlers and their families occupy separate houses. The village is recruited from patients who have been in residence for six months, and it now has over 500 inhabitants, of whom 85 are children. These settlers are busily occupied in carpentering, poultry-farming, printing, cabinet-making, upholstery, shoemaking, tailoring, or sign-writing, and there is now a village store which employs some of the women patients.

# Reviews and Notices of Books.

## NEURITIS AND NEURALGIA.

By WILFRED HARRIS, M.D. Cantab., F.R.C.P. Lond., Senior Physician to St. Mary's Hospital and to the Hospital for Epilepsy and Paralysis, Maida Vale. London: Humphrey Milford, Oxford University Press. 1926. Pp. 418. 12*s.* 6*d.*

Dr. Wilfred Harris has compiled a useful and practical volume of which the contents have an even wider range than is indicated in the title. Pain, of course, is always nerve pain, and there are very many nerves in the body—cranial, peripheral, visceral; hence in dealing with neuralgia and neuritis the author of necessity covers much clinical ground. Further, many paralyses are the result of nerve involvement. The reader need not, therefore, be surprised to find that such diverse conditions as dislocation of the shoulder, adhesions in joints, hiccough, myoma cutis, convulsive tic, and spondylitis are assigned a place in this compendium of neuritis.

The author indicates at the outset the loose way in which the terms are commonly employed; they are in many instances a complete misnomer. Nor is the distinction between neuritis and neuralgia always clear. Dr. Harris seeks to define neuralgia as a pain radiating beyond the limits of a local (filament or fibre) neuritis, this latter focus being in his view a constant finding. Objective proof of the reality of this terminological explanation would, we imagine, be difficult; conversely to his contention that neuritis precedes neuralgia (the latter he would like to think is always reflex), it might be held with justification that neuralgia precedes neuritis. However this may be, discrimination is less important than might appear; there are clinical methods of differentiation, but sensory neuritis is painful just as is neuralgia. All the common and many rare varieties—for example, meralgia paræsthetica or Bernhardt's syndrome—are described in succinct yet satisfying fashion; it is pleasing to find valuable information, with bibliographical references, in regard to out-of-the-way conditions such as hæmatoporphyrinuric polyneuritis, uveoparotitic paralysis, and so forth. Indeed, expecting so much from the excellence of the volume, we are the more surprised to find no apparent description of, or reference to, metatarsalgia or Morton's syndrome. This clinical condition alone, we think, has slipped through the meshes of Dr. Harris's all-embracing neuralgia net.

As for the topics that the author has made his own —viz., the treatment of cutaneous and deep neuralgias by alcoholic injection methods—they are handled in a masterly and authoritative manner. He may well be congratulated on his experience and on his success. Both practitioner and specialist should add this vade mecum to their libraries; it is full of valuable clinical and therapeutic data, and is well illustrated.

## THE SURGERY OF CHILDHOOD.

By JOHN FRASER, *M.C.*, M.D., Ch.M., F.R.C.S.E., Regius Professor of Clinical Surgery, University of Edinburgh; Consulting Surgeon to the Royal Hospital for Sick Children, Edinburgh. London: Edward Arnold and Co. 1926. In two volumes. Pp. 1152. 42*s.*

OF late years no text-book of the surgery of children has appeared in this country, and this work will, therefore, be examined with keen interest. It may be said at once that Prof. Fraser has been completely successful in presenting a readable and well-balanced account of the subject. There is abundant evidence that the book is not, like so many text-books, merely a compilation. The personal touch appears often in its pages, revealing the wide experience of the author and enhancing the value of his conclusions. There is, indeed, little which calls for criticism; here and there we notice an omission for which the author may have a good excuse. For instance, decortication for old resistant empyema is not described, nor is litholapaxy given as an alternative method to suprapubic cystotomy for stone in the bladder. Sometimes new methods are described which should only be mentioned for condemnation, such as the "closed method" of treating acute appendicitis in children. The only operation for ectopia vesicæ given is the intraperitoneal one of successive transplantation of the ureters, and we are not told what to do with the exposed vesical mucosa remaining behind. We are glad to see diaphysectomy for acute osteomyelitis condemned, and also, in nearly all cases, bone-grafting for Pott's disease of the spine. There are a few misprints—for example, on line 10, p. 700, "cord" appears for "canal"; on p. 638, line 27, "caries" for "carious"; and on p. 582, line 19, "fustula" for "fistula."

The book will certainly meet with a good reception from all interested in children's surgery.

## THE HISTORY OF PROTOZOOLOGY.

By F. J. COLE, D.Sc., Professor of Zoology, University College, Reading. London: University of London Press. 1926. With 1 plate. Pp. 64. 3*s.*

THE history of the progress of natural knowledge teaches us two lessons—that discovery is a process and not an event and that anyone may come across something fresh at any time. Prof. Cole's interesting lectures illustrate these points with material which is more or less familiar both to medical zoologists and to microscopists. One wonders whether Dallinger and Drysdale's description of the production of almost invisible heat-resistant "spores" by a flagellate may not possibly be more correct than recent criticism has been willing to allow; something of a similar sort has been found for some of the ultramicroscopic viruses.

A subsidy from the Publication Fund of the University has made the book very cheap, and it should be read widely.

## THE CHEMISTRY OF DRUGS.

By NORMAN EVERS, B.Sc., F.I.C., Chief Chemist to Messrs. Allen and Hanburys, Ltd. London: Ernest Benn, Ltd. 1926. Pp. 247. 32*s.* 6*d.*

THE paper cover of this imposing and attractive-looking volume displays the statement that the chemical aspect of drugs has never before been dealt with in one volume, whilst the preface states that the author has endeavoured to give a description of substances used in medicine from the standpoint of pure chemistry. The reader is therefore justified in hoping for a work comparable, say, to Die Arzneimittel-synthese and may be disappointed.

The volume is divided in a logical way into two parts, the first dealing with synthetic drugs and the second with drugs of natural origin. In the first section hypnotics, antipyretics, local anæsthetics, and so forth are described. The author states in his introduction that the drugs dealt with have been chosen "either as being of established reputation, or as being of special interest to the chemist." The selection appears, however, to have been rather limited, and confined mainly to drugs well established by English firms. In the scanty space—only three and a half pages—devoted to organic compounds of arsenic, the references to the literature are inadequate, and stovarsol is not even mentioned. Antimony compounds receive one paragraph, whilst mercurial drugs are despatched in two pages. The second part of the book is devoted to drugs of natural origin. The alkaloids are treated in a slightly more respectful manner, but the account cannot be regarded as in any way complete. Drugs of animal origin also receive inadequate notice, and the section on insulin is poor. Methods are referred to so briefly that frequently their underlying principle is not made plain. The author shows undue credulity in the section on thyroid preparations; for instance, the acetonitril test is referred to as being the last court of appeal as a test for potency.

Regarded as an expanded chemical drug catalogue, with graphic formulæ and a few details about them, this book will cause no disappointment and may, indeed, be useful. For example, the section on hypnotics will be found of value by the practitioner, and Appendix II. is really informative. It consists of a table showing the official trade names of drugs, their chemical constitution, and their main physiological action. For the production of the volume we have nothing but praise.

### PRACTICAL PHOTO-MICROGRAPHY.

Second edition. By J. E. BARNARD, F.R.S., F.Inst.P., F.R.M.S., Lecturer in Microscopy, King's College, London; Director of the Department of Applied Optics, National Institute for Medical Research; and FRANK V. WELCH, F.R.M.S. London: Edward Arnold and Co. 1925. Pp. 316. 18s.

THE first edition of this work was published in 1911, yet, as the authors say, photo-micrography has not advanced so much since then as to necessitate the complete rewriting of the book. It is true that the general level of microscopes and photographic apparatus may be higher now than 15 years ago, but individual microscopes and lenses are no better to-day than they were then. The authors have, therefore, devoted themselves to the consideration of method rather than apparatus, and have produced a volume which cannot fail to be of the greatest value to those interested in this technique. Every aspect of the subject is fully dealt with, but by the exercise of a commendable sense of proportion the manual remains of reasonable size. We have looked in vain for serious omissions; possibly a comparative scale of the speed values of the commoner plates in use would be appreciated. The book is essentially practical and is written simply and clearly, so that no one should have any difficulty in following the authors' instructions. Finally, the illustrations are excellent, and the beautiful examples of what can be done with photo-micrography are stimulating.

### CLOUDS AND WEATHER PHENOMENA.

By C. J. P. CAVE, M.A. Cambridge: At the University Press. 1926. With 47 figures. Pp. 32. 5s.

WEATHER phenomena are being more closely observed to-day, and there are many books on meteorological subjects which contain full information on the appropriate instruments and their use and on the principles of forecasting from weather maps. But the phraseology in which to describe the changing pageant of the sky is not known to many who try to communicate observations upon what they see, and this small volume, with its accompanying illustrations, will be found useful in this direction. Another class of reader to whom a more direct appeal is being made is formed by artists of all sorts, for the small photographs illustrate a very large variety of skies, the clouds of the various sorts and shapes indicated by their names massing themselves together, falling apart or fading in very typical manner. Skies that we have all had opportunities of seeing are reproduced, but as the photographs of clouds have been taken with the intent to get as much detail as possible of the cloud structure, the illustrations are dramatic. It is cloud structure which many painters fail to render correctly, or make little attempt to render; the changes in a sky at all cloud laden and at all influenced by wind are so rapid that what may be termed the architectural make-up of the vapours must often fail to obtain recognition on canvas or paper. The photographs, as the author states, were not taken with the intent to make artistic pictures, and as far as their utility to artists is concerned they should be of great use to students of landscape in providing many significant conditions of sky under which cloud phenomena, with their endless and rapid modifications, will be found to range themselves.

### CARE OF THE FEEBLE-MINDED.

*The American Association for the Study of the Feeble-Minded.* Proceedings and Addresses of the Forty-ninth Annual Session held at Raleigh, N.C., May, 1925. Comprising the *Journal of Psycho-Asthenics* xxx. Published by the Association. 1925. Pp. 360.

THE care of the feeble-minded has of recent years become a specialty and, like all new specialties, it has developed a literature of its own. The more the problem is investigated the more it becomes apparent that the workers are but at the beginning of their labours. At the American Conference held last summer the mental defective was discussed from all angles by workers of all kinds, and Dr. G. B. Smith's presidential address aptly urged the importance of amalgamating the modern trends in medicine, politics, economy, sociology, and law. The more strictly medical contributions include a review by Dr. H. W. Potter of the literature on the morbid anatomy of the mentally deficient brain, and a paper on the Understanding of the Feeble-Minded, by Dr. T. Haines. Dr. C. B. Davenport and Miss G. Allen conclude that the production of a Mongoloid dwarf requires the combination of three or more of a large number of favouring hereditary and environmental elements, and Dr. R. B. Bean compares the anatomy of the Mongol with that of the hypomorph white type. Dr. L. H. Bartemeier discusses psychoses in the feeble-minded, and Dr. Bramham psychiatric problems in the care of mentally defective children. In other sections Mr. B. W. Spilman reviews the difficult problem of religious training for these children, while Dr. Murdoch, in a paper on the Relation of Mental Deficiency to Morals, Religion, and Ethics, points out that virtue and vice do not depend on intelligence, and much can be done for the easily-moulded moron by religious and social institutions. Miss L. G. Galbraith and Miss M. S. Walker describe methods of organising work in classes for the mentally defective, and Dr. Gladys Ide discusses motivation in school work.

In his paper on Institutional Training of the Defective Delinquent, Dr. W. N. Thayer describes the procedure at the Napanoch State Institution, of which he is superintendent. During a fortnight's quarantine the delinquent is subjected to every possible examination and is usually found to have fallen far short of his possibilities. Any physical defect is corrected as far as possible, and an educational campaign instituted wherein manual and trade instruction is carried to the highest point possible but academic education through lower grades only. For the formation of social habits an even discipline is enforced, drilling-in the idea of obedience and the realisation of the benefits it confers. Supervision is relaxed gradually, and the delinquent is finally placed on parole in a colony and then in a suitable environment outside. The criticisms of present-day parole systems offered by Dr. Thayer are that it is preceded by inadequate preparation for freedom within the institution and is frequently tried under unsatisfactory employers, under too difficult conditions, or under inadequate supervision. Dr. H. M. Adler and Miss M. R. Worthington discuss the delinquents of Illinois and conclude that there is no correlation between crime and intelligence, and Dr. H. A. Cotton discusses the Relation of Focal Infections to Crime and Delinquency, basing his observations on the experience of the Psychiatric Clinic for Correctional Institutions in New Jersey, where the problem has been studied for seven years. He emphasises the danger of passing a child's mouth as "fit" from an inspection of the teeth; impacted third molars, even in childhood, are almost invariably infected, and are a frequent cause of backwardness or vague ill-health. X rays should also be applied to the gastro-intestinal tract, and colon stasis is treated at this clinic by surgical methods. About 80 per cent. of their female cases suffer from menstrual disorders, mainly due to infection of the cervix. Similarly, colon bacilli and cocci are frequently found in the seminal vesicles of the male, quite apart from any venereal infection. Removal of septic foci produces a remarkable improvement in the emotionally unstable as well as in the definitely defective. Mr. G. M. Wilson discusses the part of Psychological Tests in the Diagnosis and Analysis of Mental Deficiency, reviewing critically the many different test schemes that have been devised in recent years. In discussing the Functions of a Clinical Psychologist in an Institution, Mr. Ll. N. Yepson deplores the tendency of these officials to occupy themselves entirely with academic research; they should identify themselves with the every-day life of the institution and determine for each inmate just what type of training and environment will bring the utmost possible out of him. Dr. Mary M. Wolfe discusses the Relation of Feeblemindedness to Education, Citizenship, and Culture, and stresses the results of training the feeble-minded in public schools, particularly the inferiority complex, which is bound to develop and probably plays a significant part in defective delinquency. Dr. T. H. Haines inquires carefully into the relation between mental defect and poverty with the aid of statistics compiled by the National Committee for Mental Hygiene, and finds six times as many defectives among the poor as among school-children generally.

In all some 30 papers, mainly non-technical, are printed in this volume, and anybody who is interested in recent work among defective children will welcome their appearance in one cover.

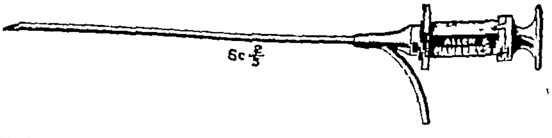
## JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XXIII. January–April.—Mr. Macleod Yearsley contributes a paper on the Development of Speech in the Normal Child based on almost daily observations of his own child for a period of over three years. He maintains that the first year is spent in methods of communication which are partly animal and partly primitive human, while the second year is devoted to the completion of a vocabulary and experiments therewith, the third year being occupied in perfecting and correcting.—In a paper on Chronic Abdominal Pain in Childhood Dr. K. U. Toverud shows that chronic constipation in some children gives rise to a picture suggesting a severe disease, recurrent abdominal pain and general malaise being the predominant symptoms. The principal cause of the condition is concentrated food which consists of readily digestible material, so that its utilisation is complete in the intestinal tract and very little or no residue is left to stimulate the intestine to peristalsis. Another cause is to be found in the bad habits of the child who is too busy playing to take time to empty his bowels. The symptoms readily disappear as soon as the child is given a diet consisting of whole wheat bread, lactic acid milk, much raw fruit, large quantities of vegetables, besides some fish and meat. —In a paper on Observations on Goitre in Childhood Dr. H. Leslie Cronk comes to the conclusion that the causes of goitre in children may be: (1) a hereditary or early acquired diminution in secretory activity of the thyroid; (2) the relative increase of weight of the body causing increased need of thyroxin for metabolism; (3) some factor which affects the tonsils in such a manner that the rise in prevalence of enlarged tonsils coincides with a diminution of goitre prevalence, and exerts such an effect on the latter that the enlarged tonsil-rate at times over-rides the effect of increased metabolism required for increased body-weight.—In a paper on Pneumothorax in Young Children, with an account of a case, Dr. Alan Moncrieff reviews the literature and points out that though many of the recently recorded cases seem to have been tuberculous in origin, tuberculosis, especially in young children, is not a common cause of pneumothorax. In his own case, which occurred in a male infant of 1 year 10 months, the favourable issue and negative Pirquet test suggested that the case was not tuberculous and that the condition was probably caused by the rupture of a subpleural emphysematous vesicle in the course of a bronchopneumonic process in the right lung. The absence of any pus in the pleural cavity was against rupture of a subpleural abscess which is the commonly accepted cause in post-pneumonic cases.—In a paper on Palpable Arterial Coats in Children Dr. A. E. Vipond, of Montreal, states that during the past year he has met with several examples of arterial thickening in children as a familial condition and of non-syphilitic origin. In a number of cases the children were thin and undersized. The left ventricle was not hypertrophied, the blood pressure was normal, or might be slightly raised. The occurrence of nephritis was accidental. No symptoms were present, and the condition did not shorten life, so that its discovery was often only accidental.—Dr. D. J. Hishon reports a case of Measles complicated by Gangrene of the Legs, with comments by Dr. J. D. Rolleston, who has collected 11 other cases from the literature since 1782. Although gangrene of the extremities as a sequel of an acute infectious disease is usually attributed to autochthonous thrombosis due to acute arteritis, in the present case the origin of the gangrene was undoubtedly embolic, in view of a definite cardiac lesion and an infarct in the kidney found at the necropsy. The abstracts from current literature are devoted to alimentary diseases.

# New Inventions.

## AN IMPROVED FORM OF LUMBAR PUNCTURE NEEDLE.

ACUTELY ill and unconscious patients cannot be placed in the position most suitable for lumbar puncture. It frequently happens in such cases that, when the needle has entered the spinal canal, the cerebrospinal fluid, instead of dropping free from the needle opening, runs back along the outside of the shaft. It is thus difficult to collect and a quantity is lost. In the modification shown a small outlet pipe is fitted near the end of the needle. When the latter is in situ the stilette is withdrawn to just beyond the inner opening of the small outlet pipe, through which the cerebro-spinal fluid escapes. It is easily collected, and by means of the stilette the rate of flow can be regulated.



The improved needle, which has been successfully used in many cases and has proved of much practical value, is made by Messrs. Allen and Hanburys, London.

These notes are given with the approval of the Director-General, Medical Department of the Admiralty.

W. I. GERRARD,
Surg. Lieut.-Comdr., R.N.

A CENTURY OF HONORARY SERVICE.—Dr. F. R. Mallett has been presented by the committee and honorary staff with a silver salver and a gold cigarette case in recognition of the remarkable circumstance that his grandfather, his father, and himself have been honorary surgeons of Bolton Infirmary since 1826. Dr. Mallett was appointed in 1893, and Dr. R. D. Mothersole, his senior colleague on the honorary staff, described the occasion as "unprecedented in medical history."

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In APRIL 17, 1926.

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## JBLIC HEALTH.

is set out recently in a the Minister of Health which the public may be, structed in health matters. s that public health educaial and propagandist, the ofessorial function and the xperts, the latter being the by qualified persons of the nstructed experience. Both recent meeting of the Royal rof. E. W. HOPE invited his o study of the influence of the e advancement of the public hole-time professorial chair of d, was founded at Edinburgh in which date Glasgow and Cardiff while London, he presumed, lar happy position within a short no meeting Sir W. MACPHERSON m for the Army Medical School to -time professor of hygiene before ould boast one, in the person of , whose "Manual of Hygiene," 5, was the earliest comprehensive bject. The policy of present-day ts is increasingly directed to education with a view to the spread of sound edge which remains in the possession hat extent sterile, and some of the recognising the vital importance of hose official duties will bring them with the people and whose duty it date established facts for the public hich will make their application com d welcome. In this discussion Sir NAN, speaking along similar lines, loser relation between the practical he University. Certainly much may the training of sanitary inspectors, and other members of municipal staffs schools of social science or public ool perhaps has been more alive to any other University city, and the seen in a keenness for hygiene which h, where certainly much was needed, lated other communities to like effort. nal side of public health education is a mandated territory by the Society of rs of Health.

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andist side of public health education difficulty that what is the business of ble to perform it may become the busi- or get performed by those without due GEORGE NEWMAN in his Memorandum ganda as concerted movement for the of a particular doctrine or practice, and f it, which is that of all true missionary rell expressed in a recent letter from LODGE to *Nature*, which concludes: "I will not refrain from stating what I firmly conceive to be the truth, as demonstrated by clear and repeated evidence, whenever such statement seems called for. If I had any uncertainty about it I would say so, but it is madness to be false to truth—no matter what the penalty may be." Those responsible for the New Health Society, feeling the responsibilities which have been assumed by their propagandist body, will be expected to scrutinise carefully the bearing and form of their utterances. In the *Medical Officer* of March 27th the honorary medical secretary of the New Health Society defined the truth which the Society exists to impress—namely, that "some of the influences which have come into play with civilisation, such as that of the unfavourable change in the habits of food with the resultant extra intestinal disease and faulty nutrition can be best countered by a return, in some measure, to the habits of food and bowel evacuation of primitive man"; and he adds, "this teaching is based on the unassailable excellence of scientific work of the last 20 years as to the intimate connexion between diet, constipation, disease of the gastro-intestinal tract and the resistance of the body to disease." Throughout the third number of the Society's *Bulletin* for March, 1926, this central aim is set forth many times in different words. People are adjured to give up factory-made foods and drinks, to discard "unnatural pseudo-scientific stuff," not to consume sugar, which is "the deadest of dead foods," to eat slowly and so "do with much less food." Constipation being regarded as the curse of civilisation, "those who eat three meals daily should get rid of waste matters thrice daily," and we should return to the habit of tribesmen whose bowels act three or four times daily and whose motions are soft. Primitive man exercises his abdominal muscles by dances which involve crouching and hopping, and the *Bulletin* reiterates the need for culture of the abdomen in the modern world. Those who wish to avoid appendicitis are exhorted to "shun artificial, manipulated foods." There is no actual statement in the text of the *Bulletin* that cancer will thereby be avoided, although an advertisement has been admitted to a prominent place which states that a form of cooking utensil will "cure constipation and prevent cancer." Do the utterances of the Society, which will have much lay acceptation, conform to medical experience? And do they represent fully the objects which public health propaganda should have?

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With some of the teaching to be found in the *Bulletin* all medical men will agree, but many will find that distorted values have been put upon general tenets, and some will consider that there are scientific reasons for holding contrary views. This is inconvenient when public propaganda is employed in dealing with medical questions, because the audience addressed cannot be expected to know the value of the evidence upon which the general views are founded. But supposing that the scientific information which is being placed by the New Health Society at the disposal of the public was unchallengeable, there would still remain need for an explanation of the monotony of that teaching. Faulty feeding, whose connexion with the incidence of cancer is not known to exist at all, cannot be claimed as a universal cause or excitant of all lapses from health, and it is to be hoped that the Society will direct the attention of the public to other places than the dinner-table for examples of the failure to maintain hygienic standards, with the pathological sequelæ. And with regard to that aspect of health to which as yet the New Health Society is confining

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f Health. Public Education in Health. Revised, Stationery Office. 6d.

its attention, it may be pointed out that there is room for much more scientific endeavour on the lines suggested by Sir GEORGE BUCHANAN, when advocating a firmer liaison between academic teaching and practical work in hygiene. Certain of the views put forward by the *Bulletin* would have far greater appeal to medical men and would be more satisfactory to lay audiences if research work along the usual lines were being carried on in support of this teaching. There is too much loose talk among the public in the course of which all sorts of diseases, especially malignant conditions, are stated to have their origin in all sorts of things, especially food. But there is too little public appreciation of what is meant by scientific evidence, and what methods can be taken to elicit scientific truth. It may lie in the hands of the New Health Society to do much good here by future propaganda.

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## THE SITUATION OF THE VOLUNTARY HOSPITALS.

DURING the last few weeks a large number of voluntary hospitals have issued their reports and held their annual meetings. The circumstances of no two hospitals are ever identical, but these reports and the speeches at the meetings at which they were adopted nevertheless show that in broad outline most of these institutions find themselves in much the same position and faced by similar problems, some of which can only be described as acute. The dominant impression left by the study of a large number of reports is that during the last few years the outlook of the hospitals upon the community and of the community upon the hospitals has entirely altered. Hospitals are no longer charities maintained to a comparatively small extent by "pious founders," but mainly by the benevolent well-to-do for the benefit of the poor. They have become remedial, and occasionally preventive, institutions kept going by a rapidly increasing proportion of the people and used by classes which, not so long ago, would have regarded the occupation of a hospital bed as a slur upon their social status. The reasons for these changes are too familiar to call for elaboration; their occurrence and the conducing factors have been noted regularly in these columns. Growing costs compelled the hospitals to cast a wide net for subscriptions; the working classes quickly realised the overwhelming advantage of acquiring at a cheap rate the right to hospital treatment; the amazing rapidity with which the scientific and research side of hospital work has grown has brought to their doors many patients who, although not weekly wage-earners, are unable to face the cost of special private treatment. The future of the hospitals has thus become everybody's problem.

Broadly speaking, the financial position of the voluntary hospitals, as disclosed by their annual reports, is fairly satisfactory, a position for which our readers have been fully prepared. As a rule they are paying their way, and a certain number have achieved surpluses sometimes astonishing in their novelty. There are still deficits, but they tend to diminish both in amount and in number. This improvement in the pecuniary situation is due mainly to the wide creation and rapid extension of contributory funds, which have not only greatly multiplied the number of supporters but provided the hospitals with a steady and increasing income. There is solid reason to hope that as these funds become omnipresent they will obviate the necessity for the frenzied special appeals which do so little credit to our business instinct and form so woefully insecure a foundation for the cost of curative work and steady and methodical scientific research. To secure this consummation, however, these funds will have to be extended very widely, since it is certain that expenditure will increase heavily as the hospitals become more and more centres of research and laboratory investigation, and approximate more closely to the ideal of prevention. Many years must elapse before we can save on the cost of cure enough to pay for the cost of prevention. Another principal reason for the present and future growth of expenditure is the necessity which faces the majority of hospitals for large extensions. On every hand there is a cry for more wards, larger out-patients' departments, more scientific apparatus and therapeutic appliances, more convalescent homes. Patients, both in and out, have increased with extraordinary rapidity of late. Some of the great hospitals see their out-patients growing by thousands, while lists of patients waiting for beds which, even after the careful sifting which they admittedly require, reach pitiful dimensions. There is nothing more harrowing to the medical staff of a hospital than the knowledge that delay in admission means that slight cases become serious and serious ones incurable. Another tax which has lately been put upon already overstrained resources comes from the alarming increase in traffic accidents.[1] Last year, according to a Home Office return just issued, there were more than 115,000 such accidents, 3525 of which were fatal. Urgent casualties cannot be relegated to a waiting list, and by no means all of these motor mischances can be dealt with in the out-patients' department.

Necessary extensions are, then, the most serious problem with which the voluntary hospitals at present have to deal. Government help has been refused, possibly unwisely, and very few institutions can hope to save anything tangible from their current revenue. For the cost of extensions the hospitals have to look to special efforts, to exceptional individual generosity, or to large legacies, and probably the special effort is at present the most fruitful source. The help that might conceivably be obtained by a change in the Poor-law which altered the status of the "infirmaries" run by the guardians is highly uncertain, and in the main it is clear that the voluntary hospitals will have to work out their own salvation. Their board rooms are full of courage and confidence, but the burden will have to be shouldered by the entire community, which needs to learn more completely than it has at present that the hospital problem is a national one and can only be solved by the nation acting as a huge sodality and for its own exceeding great advantage. The need for extensions is sharpened by the desirability, generally felt, of making some provision for patients who can pay reasonably for their maintenance and their medical care and a moderate surgeon's fee. There are no very brilliant prospects of profit in this direction when the cost of providing accommodation is allowed for, but there is a clear advantage in a small proportion of patients who not only cost nothing, but make some contribution to the funds. Already there is a notable increase in payments received from ordinary patients, though it is generally observed that the gratitude of persons cured of the hurts received in motor accidents rarely takes a tangible form, even when they recover compensation from insurance companies.

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[1] In the House of Commons just before the Easter recess Sir Herbert Nield asked the Prime Minister whether, having regard to the heavy charge which fell upon the voluntary hospitals consequent on the reception and treatment of persons injured in road accidents, who in many cases were non-resident, and whose injuries were frequently caused by reckless driving or at excessive speed, and to the fact that the injured persons were generally unable to make any contribution towards the cost of their treatment, he would consider the desirability of amending the law by enabling the court, upon a conviction of an offender, to include in the order the payment of a fixed sum, by way of contribution, to the hospital or authorise the payment out of the fines levied by way of penalty for motor offences a lump sum, or by way of percentage, to the hospital rendering aid in these cases as the court of petty or quarter sessions might direct, or to be paid out of the general fine fund of the court.

He also asked whether fines imposed upon persons convicted of reckless driving of motor-cars or at an excessive speed amounted to a considerable sum; and, having regard to the fact that during the year 1925 the sum so levied by the Ealing section of the Brentford petty sessional bench and actually recovered for fines amounted to £783, and that during the same period the King Edward Memorial Hospital, Ealing, expended approximately £1190 in treating patients injured in motor accidents within the borough over and above contributions received from patients, and that such results were probably the same in other places, he could see his way to promote legislation which would authorise the making of grants to hospitals treating such patients out of the fine fund of the courts imposing such fines.

Colonel W. Ashley (Minister of Transport) replied: I will bear in mind the suggestion, but I cannot hold out any hope that it will be possible to introduce legislation to give effect to it.

The past year was remarkable for the extent to which "wireless" was introduced into hospitals. Very many of them now possess "radio," and within a comparatively short time this diversion will probably be enjoyed by all of them. We note with satisfaction the dying struggles of the antiquated and thoroughly objectionable "ticket system." A minority of benevolent but old-fashioned people cling to it still, but it is doomed, and few tears will be shed over its tomb. It belongs to the old conception of the hospital when a few guineas bought a certain amount of patronage, and the hunt for tickets was often an exasperating preliminary to admission. To sum up the experience of the past year it may be said that the outstanding fact on the financial side is the rapid growth in contributory schemes and in their product. They are now the biggest source of revenue, and during the last five years have increased on the average 10 per cent. every year. On the scientific side we see an equally rapid growth in the use of X ray and sunlight treatment, and electromedical helps generally. There has also been an exceedingly promising quickening of interest in orthopædics, the far-reaching importance of which is beginning to be more definitely understood by the general public. There is reason to be thankful for anything which focuses lay attention upon the grave fact that a vast proportion of the physical suffering of mankind is the direct result of the neglect of disease and deformity in the early stages.

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## THE USE OF PSYCHOTHERAPY.

WE commented a fortnight ago on the prominence assigned to psychotherapy by Dr. FARQUHAR BUZZARD in his recent Lettsomian lectures, pointing out that, if psychotherapy is as indispensable as it is claimed to be, the principles governing its employment should be far more widely recognised and systematised than they are. It was further suggested that this lack of recognition and of system could be traced to a profound disagreement among psychotherapists themselves as to the choice of methods and of patients, and also to an absence of information regarding the results obtained by recourse to these various procedures. With respect to the latter the annual report[1] of the Medical Director of the Cassel Hospital for Nervous Disorders contains a great deal of valuable and practical information on what is admittedly a difficult subject expressed in language which all can understand. Two aspects of the report call for consideration. In the first place Dr. T. A. Ross has set out to demonstrate that "illnesses or states of discomfort of purely psychogenetic origin exist, which have no ætiological relations with the body, and which can be abolished by a change of mental orientation." To some it might appear unnecessary to labour this point, for common sense, embodying as it does the wisdom of the ages, surely teaches us that abnormal states of mind may and do arise independently of any physical disorder. Dr. Ross, however, very properly points out that while no one would deny that psychical symptoms may be directly dependent on toxic or chemical causes, there have recently been, especially in this country, clear indications of a return to the belief that physical conditions are usually at the bottom of all mental disorders, including that type of mental disturbance most commonly found in patients admitted to the Cassel Hospital—namely, anxiety states.

By the aid of case material the psychogenetic origin of symptoms is lucidly explained, beginning with quite simple examples and proceeding to more complicated ones. A study of these cases would seem to provide convincing demonstration of the correctness of the hypothesis which it is the object to prove. The fact that the hypothesis is independent of phenomenal reality is immaterial, provided that, as Dr. BERNARD HART has recently pointed out in his Goulstonian lectures, it explains the observed facts, is not contradicted by other facts, and is capable of verification by repeated reference to experience and experiment. It must also be borne in mind that in many of the patients the psychogenetic nature of their symptoms had not been recognised prior to their admission, while most of them had been previously submitted to physical treatment which had failed to cure them and in many cases had made them worse. From the practical point of view the crux of the matter would seem to lie in the necessity of recognising that symptoms may arise independently of bodily disease, for it is obvious that unless their psychogenetic origin is admitted, the question of dealing with them along psychotherapeutic lines can never arise. The report also refers to the fact that the symptoms complained of are, many of them, or more properly the majority of them, physical in character. This is a matter of some significance, for it is perhaps natural to assume, and the general tendency of medical teaching has always tended to support the assumption, that all bodily disturbances have a physical basis. It is much easier for the student of medicine to believe that indigestion and palpitation are the result of some subtle changes in the gastric mucosa and myocardium respectively than to be convinced that they may be the bodily expressions of some disordered state of mind. Moreover, once such convictions have become generally established many chapters of our medical text-books will have to be rewritten. In this connexion it is worth recalling that psychopathology has mainly grown from the investigation of hysteria in which the phenomena are in great part physical in their manifestations.

The second aspect of the report concerns methods of treatment and the results of treatment. Dr. Ross gives concrete examples of the several methods of psychotherapeutic approach. Where the nature of the anxiety is recognised by the patient or is revealed by the history of the illness, evaluation of the symptoms is often sufficient to secure the necessary relief, but the explanation given by the physician must fit the history and be positive in character, that is to say, the symptoms must be accounted for "in a fashion which really makes their presence a thing that might have been expected." This procedure, which is relatively easy, is suitable for those simpler forms of neurosis in which emotional reactions produced by anxieties and conflicts have been misinterpreted by the patient and regarded as signs of physical disease. The positive explanation, it may be noted, is the very antithesis of that which is too often given—namely, that "there is nothing the matter." In certain cases where the anxiety or conflict is not on the surface Dr. Ross considers that the physician is justified in making speculative inferences as to its nature, although he admits that this method is capable of becoming "a haphazard and dangerous procedure." But in those patients who are quite unaware of the causation of their symptoms, and where no grounds exist for speculative inference, recourse must be had to the method of free association or to hypnosis, and a very interesting example is given where these two methods were employed together successfully. Of the 114 patients suffering from one or other of the psychoneuroses, who were discharged during 1924, 86 were well or much improved, and although out of these 86 there were some "whose difficulties seemed to depend on complexes which were unconscious in the Freudian sense, complexes which when they were discovered struck the patients themselves as very important," the majority were probably assisted to recovery by simple explanations and the discussion of difficulties of which they were for the most part aware. Herein seems to lie a feature of great practical significance, especially when taken in conjunction with the good reports obtained from patients discharged in previous years, reports which pay tribute to the efficacy of the treatment and to the value of an efficient follow-up system. For it may fairly be submitted that the type of case which is treated successfully at the Cassel Hospital is in no way peculiar to that hospital, but abounds in every class of practice. Of the total admissions 75 per cent. suffered from one or other of the psychoneuroses, and of these a large majority were relieved or cured by methods which are sufficiently simple and straightforward as to be within the reach of any doctor who wishes to make use of them. It is often stated that these methods take more time than the general practitioner can afford, but this is largely a fallacy, for very many cases take up no more time than is spent over many physical illnesses. What, however, does take time is the initial physical examination which cannot be too thorough, and the taking of the history which cannot be too detailed. Unfortunately it can hardly be denied that the prime importance of accurate history-taking is not sufficiently emphasised in our medical schools, although in all disorders, both of mind and body, it ranks easily first as a method of investigation. It is not enough for the patient to enumerate his or her symptoms; the physician must acquaint himself with the order in which they appeared and with the circumstances in which they appeared, and it is the latter especially which so often provides the clue to some emotional stress of the existence of which the patient may be aware, but the effects of which he has ignored or misinterpreted. Without an accurate history no diagnosis is possible, and diagnosis is as essential a precursor of rational therapy in disorders of the mind as it is in disorders of the body.

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[1] Obtainable from the Medical Director, Cassel Hospital for Functional Nervous Disorders, Swaylands, Penshurst, Kent.

The report briefly discusses the Freudian view that for the purpose of curing a psychoneurosis it is necessary in every case to go to the ultimate cause. Dr. Ross's experience is to the effect that this view is not necessarily true, for the reason, if we have not misunderstood him, that he so often finds that the anxiety is within the patient's consciousness and deeper excavations are therefore not indicated. Where, however, the problem is obscure he raises no objection to the method of free association or of talking at large, provided due care is taken "not to strain associations or to force them upon the patients," a precaution which seems to us eminently sound. From the next report we hope to learn more as to which types of neurosis are particularly amenable to treatment and which are most resistant. Consideration of this valuable document compels us to revert to the plea we put forward a short time ago for the greater systematisation of psychotherapeutic principles. It would be well not to forget that, as Dr. W. RIVERS insisted shortly before he died, psychology is a new science, and that owing to premature and over-ambitious attempts to apply its supposed discoveries to practical problems, while the basis upon which they rest is still insecure, there is a serious danger that the science itself may fall into discredit, and that instead of its study receiving almost universal interest it may even become a matter of ridicule. The psychotherapist who claims that there is only one method of treatment, be it hypnosis or auto-suggestion, for every kind of mental illness, is no more and no less ridiculous than the osteopath who claims to cure all bodily ailments by manipulation of the spine, or the physician who prescribes digitalis indiscriminately in all affections of the heart. The application of psychological principles to clinical medicine must be carried out with caution and sobriety, and it is ardently to be hoped that the medical profession will have the good sense to turn a deaf ear to preposterous claims, and will resist the temptation of accepting wholesale attractive hypotheses, which while containing some measure of truth, do not contain the whole truth and nothing but the truth.

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## INTERNATIONAL SURGICAL CONGRESS AT ROME.

THE Seventh International Surgical Congress, which has just concluded its sessions at Rome under the presidency of Prof. Giordano, of Venice, was attended by more than 500 surgeons from many European countries and the United States of America. The principal subjects set down for discussion were: (1) Radiotherapy of uterine cancer; (2) Abscess of the liver; (3) Treatment of surgical tumours: (4) Surgery of the spleen; and (5) Remote results of Jacksonian epilepsy, each of which led to lively discussion. The opening of the Congress was marred, as everyone knows, by a deplorable attempt upon the life of Signor Mussolini, who had been present at the inaugural session. By a fortunate chance the Premier had just turned his head to respond to the salutation of the crowd at the moment when the firearm was discharged, and the bullet only caused a shallow wound of the lower surface of the nose. Members of the Congress were witness of the singular courage shown by Signor Mussolini during this ordeal, his first words being an encouragement to those around him to show an example of perfect calm. First aid was rendered by the President of the Congress and Prof. Bastianelli. Signor Cremonese, the Governor of Rome, in a message to the Congress, declared that under the Fascist régime Rome was more than ever desirous to contribute her part to science. The Premier took as his text the original significance of the word surgeon—that is to say, handworker, going on to speak of the surgeon's task as something far more than handiwork, demanding in fact the highest gifts of intelligence and character.

# Annotations.

"Ne quid nimis."

## THE OPTICAL CONVENTION.

THE Optical Convention closes at the end of this week, and judging by precedent it will probably be many years before anything of the kind will be held again in this country. We regret this, for the knowledge disseminated is valuable. Those who have visited its exhibition at the Imperial College of Science, South Kensington, will have realised afresh how vital is the science and industry there represented. It is the handmaid of myriad arts and occupations, and it is a servant so efficient that people easily forget the complicated technique which underlies its service. During the greater part of last century, as the Prime Minister pointed out in his opening address on April 12th, British work in the optical industry was predominant, and it was not until the end of the century that it was first threatened, and finally almost overwhelmed, by foreign competition. The grave difficulties of the war decided the Government to safeguard the industry, and a substantial grant was also given to the British Scientific Instrument Research Association. This measure of protection had its critics; but the case for subsidising the optical trade was more convincing than some others, for the competition of countries with depreciated exchanges would have made it difficult, if not impossible, to re-start an industry such as the manufacture of optical glass—which had almost died out in this country—without assistance of some kind from the State. At South Kensington there is an interesting display of the optical glass now being produced of which there are over 100 varieties. This is one of frequent exhibits of general interest, but there are also many which are likely to interest medical men especially. Innumerable kinds of ophthalmoscope are shown, and there are many beautiful drawings of abnormal conditions of the fundus. The Refraction Hospital and many private firms exhibit in profusion the latest apparatus for the practice of ophthalmology, and specialists will do well to avail themselves of the opportunity for comparison afforded. Needless to say, there is an excellent display of microscopes, and not the least interesting is the collection of early models, many of which were used by famous scientists of the seventeenth and eighteenth centuries. Demonstrations of some of the more celebrated experiments in the history of optics are given. To mention the other sections of the exhibition would savour of the catalogue; all that is needed is to say that nothing seems to be missing to make it complete within the wide bounds laid down. The visitor may be tempted at first to spend his time in seeing the sideshows and in cultivating his capacity for being deluded. But he will soon find that the rest of the exhibition is even more entertaining than the entertainments, besides being instructive even to the ignorant.

## IONIC MEDICATION IN DENTISTRY.

THE theory underlying ionic medication was strongly attacked some years ago by Dr. David Campbell,[1] who claimed that the amount of any drug which could be introduced was so negligible that the method offered no advantage over administration of the same drug by the mouth, by inunction, or by hypodermic injection. He also stated that there was no evidence of local concentration or deep penetration, and that any good effects were due to the electric current rather than to the drugs used in connexion with it. Mr. Owen Morphy, in a thoughtful paper which recently appeared in the *British Dental Journal*,[2] carefully analyses Dr. Campbell's criticism, and contends that ionic medication is both theoretically and practically justified as a method of securing a greater penetration of drugs than is possible by other forms of application. He discusses its use, especially from the dentist's point of view, and in dentistry the conditions are in some ways special. As he points out, inunction and hypodermic medication are not possible in the treatment of pyorrhœa or sepsis of root canals, the two chief dental conditions in which ionic medication is employed. He lays stress on the fact that the ionised drug is in a nascent form, and there is strong evidence, he says, that various drugs are more potent in this form. Dr. Campbell carried out a series of experiments to show that when a drug is introduced into the body by ionic medication, it passes so rapidly through the tissues, as estimated by its appearance in the urine, that any great amount of local concentration is unlikely. He also considered that its rapid appearance in distant parts of the body was an argument against any deep local penetration, since the ions give up their function of carrying the current almost immediately they pass the skin. But even in Dr. Campbell's figures for iodine there was a margin of 20 to 40 per cent. of iodine unaccounted for; and Mr. Morphy suggests that, conceivably, this represents in part the iodine which has been introduced into the tissue cells and temporarily fixed there. It is noteworthy that in Dr. Campbell's experiments the amount of iodine present in the urine increased with the strength of the current employed. In dentistry only weak currents are used in ionic medication. While it may be granted that the actual amount of iodine ions liberated is small when used in root canal work or in the treatment of pyorrhœa, Mr. Morphy rightly says that even a small amount of so powerful a drug as nascent iodine may not be negligible when introduced into the narrow space around the apex of a tooth or into the narrow zone of tissue in a pyorrhœa pocket. The only alternative to ionic medication, moreover, is the local application of a drug under conditions which do not readily favour its penetration to the actual area of infection. Apart from the particular conditions existing in the mouth, Mr. Morphy questions whether hypodermic injection gives as much local concentration as ionisation. In local analgesia, in order to obtain a local concentration of the anæsthetic, it is necessary to add adrenalin to prevent a too rapid diffusion which would defeat the ends for which the anæsthetic is given. An argument advanced against deep penetration is that, according to experiment, ions cannot be driven through the skin to a greater depth than the subcutaneous tissues, owing to the resistance of the skin. Mr. Morphy concedes this, but points out that in pyorrhœa the pocket has largely lost the normal lining of epithelium present in the gingival trough. Similarly, in root canal treatment the apical tissues have no epithelial lining; there is no cutaneous resistance to limit the penetration of ions into the submucous tissues. He reproduces two microphotographs taken by Mr. E. Sturridge showing very definitely the amount of penetration possible through the gum of a living animal. The argument that the good effects of ionisation are due to increased generation of heat does not really affect the use of ionic medication in dentistry. The simple ways of applying heat used in other parts of the body are generally not appropriate to the treatment of the dental tissues, and although it is quite possible that some of the good results of ionic medication may be due to heat, this fact in no way detracts from the value of the treatment for dental conditions. Again, the argument that ionic medication acts by producing hyperæmia, while affecting the validity of the underlying theory of its action, is no argument against its practice, especially in the treatment of pyorrhœa or septic root canals. As Mr. Morphy points out, such views only bring ionic medication closer into line with high frequency or ultra-violet radiation in the treatment of dental disease. He lays a good deal of stress on the coagulating power of zinc ions. In root canal therapy this tends to promote dryness of the apical region which is so difficult of access. The coagulation, he suggests, may be beneficial in the treatment of pyorrhœa by sealing and sterilising the suppurating surface of a pyorrhœa pocket. On clinical grounds there seems little doubt that ionic medication has a beneficial effect in the treatment of pyorrhœa, especially in the early stages of the disease. Pyorrhœa is so notoriously difficult to treat that it is far from easy to evaluate the many forms of treatment employed. Ionic medication will not work wonders, but used judiciously in combination with other methods it has a definite place in dental therapeutics. Its exact mode of action remains uncertain, but Mr. Morphy's views are reassuring to those who use this form of treatment in dental conditions, and consider it both legitimate and valuable. That part of its action may be due to increased heat and a local hyperæmia may well be true; but, if so, this is an added argument for its use.

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[1] Brit. Med. Jour., 1922, i., 409.
[2] Brit. Dent. Jour., March 15th, 1926.

## FLYING DOCTORS.

The distinguished specialist who flies once in a while to a rich, importunate, and distant patient is already familiar to most of us. Less is known of the systematic use of aeroplanes for the sick and injured, although the ambulance aeroplane has already done good service. It was first used by the French Army in Morocco under Marshal Lyautey. In May, 1921, 20 aeroplanes, each carrying two stretchers, were sent to Morocco, and proved so successful in evacuating the wounded that since then many more have been employed. The Swedish Red Cross has done pioneer work in using an ambulance aeroplane to transport the sick from its sparsely populated northern areas to the nearest hospital, often over 100 miles distant. In 1923 it applied to the Government for a subsidy to purchase an aeroplane for this purpose, and the Government agreed to share the expense of purchase. The machine is piloted by military airmen, and the Red Cross defrays the running expenses. Many lives have been saved by this means. One patient, suffering from hæmorrhage and living in a very isolated part, was transported in an hour and a half to the nearest hospital at Boden, whither the journey by sledge would have taken at least 20 hours. Once the idea had taken root its corollary became evident. If an aeroplane can take the patient to the doctor it can also take the doctor to the patient. This second life-saving use for the aeroplane is particularly applicable to Australia, with its average population density of only 1·83 persons per square mile, and in the April number of *The World's Health* H. C. Loeffler tells how the aeroplane is helping to solve the problem of providing medical aid to distant settlers in that country. A single doctor at Darwin has a practice extending over an area ten times that of Great Britain, but the condition of roads and absence of bridges no longer prevent him from reaching patients far off in the Bush. The Australian Inland Mission, which has already been instrumental in supplying nursing homes to the "Outer Bush," is now proposing to extend its activities to supplying doctors by aeroplane. It has therefore mapped the central part of the continent into circular districts, each with a radius of 200 miles which could be covered by flying doctors when necessary. As a first step, the Mission proposes to develop a wireless service and to educate bushmen in its use. Meanwhile the aeroplane plan has been submitted to the National Commission on Health, and it is hoped that it will meet with this body's approval. The plan includes utilisation of the regular mail aeroplane services to furnish personnel and equipment, under contract, for carrying these flying doctors.

In England communications are so rapid and distances so short that little use has been made of aeroplanes for medical purposes in civil life; but in the United States, if ordinary means of transport fail, the Red Cross can call on the aeroplanes of the Army, the Navy, and the Postal Services to send help to the victims of distant railway accidents, mine explosions, and epidemics. Outbreaks of diphtheria in remote districts have been dealt with effectually by sending doctors, nurses, and serum in a few hours instead of days. Aviation has also helped in the prevention of disease; for in Louisiana aeroplanes have been used to destroy mosquito larvæ by spreading Paris green over the surface of large lakes. All over the world there are rescues and reliefs recorded which recall adventures told by writers in boys' books which seemed fantastic two or three decades ago. In Switzerland an aviator dropped food down to a party cut off on a mountain side; in Sweden some fishermen were saved from starving on an island when their communications were cut off by the breaking of an ice bridge; in Nigeria the wife of a British official was bitten by a mad dog and—by courtesy of the Governor of French West Africa, who sent her an aeroplane—was transported 1300 miles to the Pasteur Institute at Dakar, which she could not otherwise have reached for a month. The aeroplane, it is evident, has its record of salvation as well as of destruction, and in the face of so rapid an advance it is not surprising to learn that in Columbia (South America) a hospital is being built with a flat roof on which, it is hoped, the regular air ambulances will alight with their cargo.

## ARSENIC IN APPLES.

At the end of last year several Hampstead tradesmen were prosecuted for selling Jonathan apples which contained sufficient arsenic to have given rise to complaint of illness on the part of some who had eaten freely of them, and it is now stated on behalf of retail fruiterers that the public are to some extent neglecting apples and purchasing other fruits instead. This would be unfortunate, for, as we pointed out in commenting on the Hampstead prosecutions, the apple is a delightful and important article of food, and there is a large trade in this fruit between this country and America. The *Literary Digest* of New York for Feb. 20th reproduces our annotation of Dec. 19th, 1925 (p. 1295) substantially in full, and this has led Mr. J. H. Merrill, Ph.D., in charge of fruit insect investigation at the Kansas State Agricultural College, to protest in a letter to the Editor of the *Digest* against what he describes as the most ill-informed article he has ever read in any publication, adding, "the ignorance displayed in it hits at the very foundation of one of the great industries of the country, that is, fruit and vegetable growing." Dr. Merrill admits that "some physician may have found arsenic in apples," but he asks us to take into account the number of people that have eaten apples from sprayed trees without being injured in the least. "When you consider how many of them are still living," he writes, "you will admit that the mortality rate from eating arsenically-treated apples is remarkably low." We can agree with Dr. Merrill that arsenical poisoning from consuming apples may be uncommon, without sharing his view that the event is unimportant when it does occur. It has occurred precisely as we said, and we are glad to have drawn attention to the occurrence. The material part of Dr. Merrill's letter, however, is his statement that the arsenic found in apples comes from the soil in which they are grown rather than from the spraying. This fact, he says, was brought out at a meeting of the American Association of Economic Entomologists held in Boston in December, 1910, where it was shown that when apple-trees are grown in soil which contains arsenic, the arsenic may be recovered from the wood of the tree and the fruit. This possible provenance of the arsenic found on analysis deserves investigation, but the information is not new. A certain amount of evidence has been available in this country for more than 20 years. Experiments were conducted at the Woburn Experimental Farm in 1901 by Mr. J. A. Voelcker, Ph.D., on behalf of the Royal Commission on Arsenical Poisoning, to see whether ordinary farm crops took up arsenic either from manures in which it might occur or when arsenic was added direct to the soil. The work was conducted on barley and on swedes, and Dr. Voelcker found[1] that arsenic did not enter into the matured grain of the corn crop nor into the bulb of the root crop, although it might be found in the green leaves of the swedes and in the green stalks of the corn crop if cut early. These results confirm the contention of Dr. H. E. Cox, public analyst for Hampstead, that arsenic is not natural to apples, and, as Dr. Cox remarked in an article in the *Analyst*, to which we have already drawn attention,[2] the presence of lead with arsenic in or on apples is fairly conclusive evidence as to its source. We must provisionally regard as a possibility the finding of appreciable quantities of arsenic on the peel of apples which have been sprayed with it after the blossoming period, but we hope it may be possible for the appropriate Ministries in apple-growing and exporting countries to take measures to reassure the public of the practical freedom from arsenic of apples intended to be consumed in a raw condition. The Association of Apple-growers in Nova Scotia has, we understand, appointed a committee to investigate and report.

## A TUBERCULOSIS MATERNITY CLINIC.

FOR the last six years Prof. A. Couvelaire has been running a special service[3] at the Clinique Baudelocque, in Paris, for the care of pregnant women suffering from pulmonary tuberculosis, with the express object of protecting their new-born babies from maternal infection. This service is run in connexion with various antituberculosis dispensaries and with those organisations which board out the children of tuberculous parents in foster homes, according to Grancher's principles. A special pavilion at the clinic has been set apart for confinements, and each mother has a separate room. Those who are already receiving treatment for tuberculosis can continue their treatment during their lying-in, and as soon as a child is born it is separated from its mother and is put in a special ward in another pavilion. As soon as it has been established, by medical examination at the clinic, that an expectant mother is tuberculous, she is referred to one or other of the specially equipped tuberculosis dispensaries, usually the Léon Bourgeois Dispensary, where arrangements can be made at once for the ultimate boarding out of her child. When the mother comes out of hospital after her confinement, she is again referred to the dispensary for advice and treatment. The babies are removed from the hospital as soon as possible—that is, as soon as artificial feeding has been properly established and the weight curve is satisfactory. They are taken straight to their foster home in some country district, and here they stay until they are at least 4 years old. The organisation of the service has been made possible only through the competent help of a trained social worker, who obtains all the family and social histories. From November, 1921, till October, 1925, 231 infectious tuberculous cases were confined in this small annexe; 13 of them died under care, two from obstetrical complications, and 11 from tuberculosis. Of the 101 women who entered the clinic before May, 1924, and who were kept under observation during the year after their confinement, 16 died in the three months following confinement, and 23 died between the fourth and twelfth month after it, so that only 63 survived at the end of one year. Of the total of 231 cases, 40 were receiving artificial pneumothorax treatment. None of these had any complications during their confinement. The average weight of the babies born alive was slightly below the normal. Of the 223, three died from obstetrical complications at birth, two from fatal deformities, and four from congenital syphilis; five were born prematurely and survived only a short time. This left 200 survivors, a proportion very little inferior to that observed in most of the Paris lying-in hospitals. Two series of observations have been made by Prof. Couvelaire on the subsequent fate of these children. In 1923 a group of 57 babies placed in foster homes was followed up. Nineteen of them had died before the end of the first month, and one more, kept in hospital because it was delicate, had died at the end of the fourth month. Four of them were born prematurely, but the remaining 16 appeared to be healthy at birth. Out of a second group of 161 babies who showed no signs of tuberculosis, 20 died during the first month and six between the second and third. Prof. Couvelaire's conclusion is that the principal cause of mortality amongst these children is not any weakness at birth due to maternal infection, but is rather the separation and lack of breast feeding. He points out that although the number of children saved by his service is disappointingly small at present, the quality of the survivors has been much improved and many have been saved from tuberculosis.

## THE DEVELOPMENT OF PHARMACY: SIR WILLIAM GLYN-JONES.

Sir William Glyn-Jones has resigned the office of Secretary and Registrar of the Pharmaceutical Society, which he has held for the past eight years, in order to take up the position of Chairman of Council of the newly formed Proprietary Articles Trade Association of Canada, and the Dominions could have found no one more capable to reorganise the business conditions of pharmacy. He first came into public view some 30 years ago as founder of an association to put down certain abuses in the trade of patent medicines which were oppressing the best sort of retail chemists. At that time the sale of some obviously quack nostrums were used by the less scrupulous druggists to attract customers to their shops, the articles being sold at prices which yielded no profit. Consequently, dispensing chemists who did not resort to advertising methods of this kind experienced a falling off in their legitimate business. The new association put a stop to the evil by bringing manufacturers, wholesale druggists and retail chemists together, with the result that regulations were made by which no proprietary medicine, the makers of which belonged to the association, could be sold below a fixed minimum price; any retailer who violated the rules was placed on a "stop list" and prevented from obtaining further supplies of any of the "protected" articles. The economics of this arrangement are not our concern, but it is well that doctors and the public should understand their fundamental object. By bringing together the members of all sections of the drug trade, Sir William Glyn-Jones showed that what pharmacy had long been looking for—namely, an organised plan of development—had been found. Those who saw in the movement nothing but a plan for securing to chemists a profit on proprietary medicines should appreciate now that the outcome has undoubtedly been for the public benefit. Sir William Glyn-Jones may have secured his dominant position in pharmacy by reaching the hearts of men in an obvious way, but he has used that position for very worthy motives; for instance, the formation of the Chemists' Defence Association, the severance from the Pharmaceutical Society's activities of the trading interests of pharmacy, the union of the Society with the British Pharmaceutical Society, and last but by no means least the establishment of the pharmacological laboratories. We have no doubt that in Canada Sir William Glyn-Jones will further prove himself the champion of pharmacy. When Member of Parliament for Stepney he took an active part in the framing of shop hours legislation; he served his craft manfully, sometimes in opposition to the medical view, when the National Health Insurance Acts were in the making; and, as an expert on poison and pharmacy law, he influenced legislation in the Dangerous Drugs Acts. The retail pharmaceutical trade of Canada has selected for its principal executive officer a man with first-class claims for the post.

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[1] See Jour. Roy. Agricult. Soc., 1923, p. 149.

[2] THE LANCET, March 27th, p. 691.

[3] Bulletin de l'Académie de Médecine, 1926, No. 9

## THE MEDICAL REGISTER FOR 1926.

ATTENTION has been already called in our columns[1] to certain errors which had crept into Tables (D) and (E) in the newly issued Medical Register for 1926. The pages on which these tables appear have now been reprinted and issued in corrected form to all of those to whom official copies of the Register had been sent. Table (D) as corrected is as follows :—

TABLE (D), *showing the Total Numbers, with percentages of the Whole, of Persons (a) registered in, and (b) remaining in, the three respective " Local Registers " for England, Scotland, Ireland.**

| Country. | (*a*) Total number and percentage of persons registered from the beginning of registration in 1858, up to Jan. 1st, 1926. | | (*b*) Number of persons now remaining in the Register, whose names are contained in the present " Medical Register " for 1926. | |
|---|---|---|---|---|
| | Number. | Percentage of the whole. | Number. | Percentage of the whole. |
| In England .. | 54,192 | 55·13 | 24,842 | 48·01 |
| In Scotland .. | 25,741 | 26·18 | 16,349 | 31·60 |
| In Ireland .. | 15,061 | 15·32 | 7,604 | 14·70 |
| Colonial .. .. | 3,087 | 3·14 | 2,822 | 5·46 |
| Foreign .. .. | 229 | 0·23 | 121 | 0·23 |
| Totals .. | 98,310 | 100·00 | 51,738 | 100·00 |

* The "Medical Register," as formed pursuant to Section XXVII. of the Medical Act (1858), is the aggregate of the three "Local Registers."

The corrected total of persons whose names are contained in the Register for 1926—namely, 51,738—should now be carried forward to the last column of Table (E). In this table two other figures opposite the year 1925 require slight modification—namely, " Number added by Registration : Foreign," should read 9 instead of 8, and " Number added by Registration : Total," should read 2570 instead of 2569. This completes the correction of the 1926 Register, but those who possess the 1925 Register should note that Table (D) in that issue is not trustworthy, and that the total for the year in the last column of Table (E) should read 50,035. It is now possible to infer the increase in registered names during the last two years : there are 1703 more names in the 1926 than in the 1925 Register, and 1895 more names in the 1925 Register than in the 1924—a large increase compared with the decennial average of 851.

Summer Time will commence in Great Britain, Northern Ireland, the Channel Islands, and the Isle of Man next Sunday morning, April 18th, at 2 A.M., when the hands of timepieces and clocks should be advanced an hour. In France and Belgium Summer Time will commence three hours earlier, and according to the *Journal Officiel*, the legal hour should be advanced by 60 minutes at 23 o'clock on Saturday, April 17th. In both countries Summer Time will end on the night of Oct. 2nd/3rd. Summer Time in Holland will not begin until May 15th, and Spain has not yet reached a decision on the matter.

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[1] THE LANCET, March 20th, p. 613.

NATION'S HEALTH EXHIBITION AT LEICESTER.—On Thursday, May 20th, at 2.15 P.M., Colonel L. W. Harrison will give an address on the Diagnosis and Treatment of Syphilis, when a film with this title will be displayed. The film has been prepared for the medical profession on behalf of the British Social Hygiene Council, and will be exhibited in the Cinema Hall, Junior Training Halls, Aylestone-road, Leicester. We understand that this film will shortly be shown in the London district. In the same hall at 5 P.M. a conference will be held to consider what further steps can be taken to prevent congenital syphilis, when the opening address will be given by Dr. Norman Cruickshank, followed by Mr. John Adams, Dr. David Lees, Miss Cummins, and others.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXIX.

## THE TREATMENT OF SUBSTERNAL AND PRECORDIAL PAIN.

THE name angina, from its derivation, indicates a breast pang, but in practice has come to mean a heart pain. It is important, therefore, before making a diagnosis of angina to make certain that the pain complained of is a true heart pain. The patient complaining of pain in the region of the heart, or in other parts of the body, often finds it difficult to describe the sensations which are felt. The diagnosis of angina depends in the main on the history which the patient gives. The angina syndrome has certain essential characteristics. The severe pain has a direct relationship to effort, and is only indirectly associated with the taking of food. It may have a close connexion with the emotional state and general health of the individual. The seat of the pain may be localised to one small area in the region of the heart, or may have a widespread distribution involving the chest, neck, jaw, the back, the arms, and the abdomen. It is a continuous pain and is felt in all grades of severity. There may be no signs of structural disease of the heart. In young subjects absence of these signs is exceptional, in elderly subjects frequent. The diagnosis of angina should be made with caution in all young people with structural disease, and rarely if ever when signs of disease are absent. In middle-aged and elderly subjects, particularly in men but not uncommonly in women, the diagnosis of angina will have to be made in many, if not most, instances from the history alone. If angina is understood to be a heart pain, a symptom of myocardial exhaustion—and this is the view generally held, at least in this country—then it follows that a healthy heart muscle can give rise to pain, anginal in character and distribution, when it is called upon to carry a very heavy load. A severe and prolonged exercise can provoke such a pain in a heart that is in no way damaged. The subject of this exercise, if he is in good condition, is less likely to complain of precordial pain or discomfort than another who is in poor condition. An athlete wins a race and feels no pain, but if on another day he is septic half the effort may produce pain of an anginal character. When the myocardium has been damaged by disease, pain may be provoked by severe physical exertion or by the slightest effort, or it may be felt with the patient at rest. Just as some patients complain of breathlessness only when walking up a steep incline, others when walking on the level, or when at rest, so also can patients with angina be graded. The effort required to produce pain should be the index of the degree of myocardial exhaustion. Pain that is felt at rest is therefore comparable with breathlessness at rest, as a symptom of heart failure, but it belongs to a different class. The ease with which pain is produced should be the guide in forecasting the course of the disease. In the same way that breathlessness on exertion may not be due to myocardial disease but to phthisis or some other cause, so also may we expect to find patients with a heart pain due to causes other than myocardial disease.

### *Differential Diagnosis.*

The first object in examining a patient with pain in the substernal area should be to determine whether the pain is due to myocardial disease alone (primary angina), and if so, how far the disease has progressed.

Signs of increase in the size of the heart, with or without valve disease, associated with pain on effort, should be an aid in arriving at a decision in many cases. There will be others without any enlargement of the heart, and with no valve disease; in these myocardial disease may be the cause of the pain. Before this diagnosis has been made, disease in other parts of the body should be excluded. Structural changes capable of undermining the health may cause cardiac pain apart from disease of the heart muscle itself. This is termed secondary angina. A third group of patients with substernal or precordial pain have no signs of structural disease of the heart or any other part of the body. They are classed as neurasthenics. It is a condition most often met with in women, but it may occur in men. In these the diagnosis is made from the absence of structural disease, and from the presence of other symptoms of neurasthenia. Hyperæsthesia over the pain area is more common in this type of case than in primary angina.

If at the end of the examination the patient cannot be placed in any one of the three groups—primary angina, secondary angina, or neurasthenia—then the pain is generally not cardiac at all, but can be accounted for by structural changes or functional disturbance in some organ other than the heart. In some the seat of the trouble lies in the gastro-intestinal tract, perhaps a gastric ulcer or gall-stones; in others the lungs or the pleuræ may be responsible; in not a few cases the genito-urinary tract will be the offending system, with renal colic simulating angina.

### *Appropriate Therapy.*

The treatment of primary angina is that of heart failure. The patient must live within the limits of his exercise tolerance. Those activities, physical or mental, likely to provoke pain must be avoided. In a word, the basis of the treatment in this type of patient is the management of his daily life; a sufficient amount of exercise and no more—all that he can do comfortably without pain. He must be guided therefore in his choice of a suitable occupation, one that does not exhaust or unduly tire the damaged myocardium. The more advanced the disease and the greater the degree of heart failure the more restricted will be the field of cardiac response to effort. Some patients will be complete invalids and bed-ridden; others can do no physical work and are semi-invalids in their daily life; many can over many years do half-time work, and there will be some whose activities are only restricted to the extent of avoiding excesses. The diet should be an easily digested one, erring on the side of low caloric values; small meals slowly eaten, and well masticated, and taken with a minimum of fluid. It is important to rest after meals, for pain is easily provoked at this time. The general laws of hygiene should be rigidly obeyed. Oral sepsis, or sepsis elsewhere, should be removed. These patients do not tolerate cold winds or exposure to dampness. Sleep should be aided by suitable sedatives (bromides and chloral) if there is a tendency to insomnia.

When the anginal attack is severe and persists with the patient at rest amyl nitrite may relieve the pain. Morphia may be required to make the patient comfortable. This drug is well tolerated, and can be given in large doses and repeated. Chloroform inhalations alone relieve some patients of their agonising pain, especially when the anginal attack is caused by thrombosis or embolus in coronary vessels. Sodium nitrite gr. 1, slowly dissolved in the mouth a quarter of an hour before beginning such exercise as walking, may prevent the onset of expected pain. Diuretin given in doses of gr. 10 over a prolonged period is a useful drug. If the patient is of a nervous type, it will be found helpful to add pot. bromide gr. 10 or 15 to the diuretin, and give it in a mixture t.d.s. for a month or longer. Pot. iodide, gr. 10, with pot. bromide, gr. 10, can be given, perhaps with some relief to the patient. In the hypertension cases the iodides are supposed to give the best results. There is no pharmacological evidence to support this view.

With a history of syphilis, or if signs of this disease are present, the treatment should include the usual mercurial treatment with potassium iodide in gr. 10 doses, over a prolonged period. Each year a course of six or eight weekly intravenous injections of N.A.B. 0·6 g. should be given. Diathermy, three treatments a week over a period of a month, is helpful in some cases.

*Surgical Treatment.*—There is no sound reasoning to support the surgical treatment of angina, but there is some evidence that benefit in primary angina has followed the Jonnesco operation of cervical sympathectomy. The results obtained in Vienna by Höfer from cutting the depressor fibres of the vagus need confirmation before this operation can be recommended. Danielopolu has described a modified Jonnesco and Höfer operation the results of which also await confirmation.

*Secondary Angina.*—Here we must rely on removing the primary cause of the disease. The body should be explored for structural disease, sepsis, or some functional derangement; treatment should depend upon the results of this examination. It will also be found necessary for the relief of the pain to employ the nitrites, diuretin, bromides, counter-irritants, and diathermy as in primary angina. It is important, for its psychological effect on the patient, to emphasise the secondary nature of the heart affection.

*Neurasthenic Cases.*—It is important to stress the symptoms which can be explained on other grounds than those of cardiac disease, and to avoid emphasising such symptoms as are cardiac in origin. In this way the attention of the patient can be deflected from the heart. If the symptoms can be attributed to the stomach the treatment then becomes one of diet, carminative mixtures, and a judicious use of sedatives. Many of the drugs recommended for the treatment of primary angina can be usefully given in cases of angina of this type.

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# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. A. H. S. Richardson is placed on the Retd. List with the rank of Surg. Capt.

Surg. Lt.-Comdrs. to be Surg. Comdrs.: R. F. Quinton, M. J. Aitken, J. A. Maxwell, M. S. Moore, W. G. Thwaytes, C. E. Greeson, W. F. Beattie, H. W. Fitzroy-Williams, F. E. Fitzmaurice, T. J. O'Riordan, J. C. Kelly, and J. M. Horan.

## ROYAL ARMY MEDICAL CORPS.

Maj. G. A. D. Harvey to be Asst. Dir. of Hygiene.

Maj. C. M. Drew to be Deputy Asst. Dir.-Genl., vice Col. T. C. Mackenzie, retd. pay (Res. of Off.).

Temp. Maj. P. St. J. Wilkinson relinquishes his commn. and retains the rank of Maj.

Capt. J. H. Baird is restored to the establishment.

Temp. Capt. D. A. Chalmers relinquishes his commn. and retains the rank of Capt.

de Lisle Carey and P. Weiner to be temp. Lt.

### MILITIA.

Capt. T. Warrington to be Maj.

### TERRITORIAL FORCE.

Capt. W. George to be Maj.

Lt. M. H. Summers to be Capt.

## ROYAL AIR FORCE.

N. P. Henderson to be Flying Officer, No. 600 (City of London) Bombing Squadron.

# Special Articles.

## AN ATTEMPT TO PROVIDE A STANDARD DEATH-RATE FOR BRITISH MERCHANT SEAMEN.

By Fleet Surgeon W. E. Home.

### Part I.

The President of the Board of Trade has told us (Hansard, April 9th, 1925) that a death-rate for merchant seamen cannot be prepared, and what he said was lamentably true. Still, an approximation may be made, and it is worth attempting, for it will show how much greater are the sailors' risks than are those of men in other callings, risks both of accident and disease, and if this sinks into the public conscience a planned attempt to reduce them may be set on foot. A wise critic, writing on this subject, suggested that a death-rate in regard to one calling was apt to mislead, being so little comparable with those of the general population in consequence of the different age distributions. It seemed, therefore, that an attempt must be made to get out a standard death-rate for merchant seamen before people would pay heedful attention.

And, indeed, it may seem absurd to set out to find even an approximate standard death-rate for merchant seamen when we have no information that is accurate or generally accepted as to their number, or as to the total of the deaths attributable to the industry in any year, while even the names of the diseases from which they died are less certainly known than are those of other persons; for sailors' deaths are often named only by captains of ships, admittedly shrewd men, or by other less trustworthy observers, but who are not doctors. Still, the fact that there are these uncertainties only makes it more expedient for the question to be examined as thoroughly as possible, so that the health level of the merchant service with all its risks may be put before the profession as completely and as exactly as possible.

The last official statement professing to give a complete account of the death-rates of "occupied" merchant seamen is in Part II. of the Supplement to the Sixty-fifth Report of the Registrar-General (Command Paper 2619 of 1908), a pendant to his report on the 1901 census. It was published in 1908, and concerned itself with English occupational mortality as evidenced among the registered deaths of workers whose brethren had in that census stated themselves as belonging to one or other of its hundred occupational groups. The deaths amongst such people that occurred in England and Wales during 1900, 1901, and 1902 were assembled according to the occupational groups, and according to ages in those groups, and according to the causes of the deaths, and were then divided by three times the census population at each age and group that the appropriate death-rate should be found. Two sets of tables were prepared, one for the "occupied" in each calling, the other for the "occupied and retired." In this paper we are concerned only with the "occupied." To make comparison of the health conditions in the groups easier, there were also calculated "Comparative Mortality Figures" for the men in each calling between the ages 25 and 65, those ages being selected as giving a fair impression of the risks incurred by men who had settled down to carry on their occupations. In the earlier years the numbers in each group kept increasing as new recruits came forward, but from 25 onward the totals gradually decrease. The "C.M.F." were chosen as they were because it was observed that in 1900–02, 281,009 deaths had been registered among "All males, occupied and retired" of ages 25–65, of whom 6,722,009 had been enumerated in 1901; that is, 1000 deaths had occurred among every 71,005 males, and deaths were stated not as in death-rates per 1000, but per 71,005 men (the comparative mortality figure being the death-rate multiplied by 71·005). The basic or unit figure, 1000, the comparative mortality figure for "All males, occupied and retired," is equivalent to a death-rate of 14·08.

Among the greater occupations employing over 100,000 men daily, the highest C.M.F., 1987, was found among the "general labourers." That for merchant seamen was 1547, equivalent to a death-rate of 21·78, 50 per cent. above the average (14·08), as the C.M.F. directly shows.

In his summary dealing with the health conditions of different callings, Dr. Tatham, who prepared the report, observed (merely on the figures before him it should be said: later they will be shown to be incomplete) that "the seamen's loss of life from accident was nearly four and a half times the average among all occupied and retired males generally (260 against 59)" and further noted that, though decreasing, "their mortality from phthisis is still excessive (249 against 187)."

In Table V. of the report (p. clxxxiii.) there are stated, for a score of selected causes of death, in the middle of each page as a mean, the comparative mortality figures for "All Occupied Males," and above that some 30 groups who had the heaviest, and below some 30 who had the lightest mortality. In these lists merchant seamen come to notice as suffering unusually heavily from diseases of the nervous, circulatory, digestive and urinary systems, also from cancer, while having besides the heaviest mortality from accident.

A similar report, dealing with 1910–11–12, would doubtless have appeared by 1918 but for the war. Indeed, part of it, relating to "occupied and retired," was issued in 1923, but does not concern us here. The report appropriate to the census of 1921 is now in preparation, but as it has not yet appeared, the 1908 report is the latest official summary by the Registrar-General of the mortality among "occupied" merchant seamen.

Table I. below shows certain figures from the 1908 report that have interest as they concern seamen and some of the larger groups. The number of men in each group are stated, and then, for ages 25–65, the chief cause of mortality in the group, next, the comparative mortality figures for deaths from all causes, and from phthisis and accidents which are the chief risks of seamen; the corresponding death-rates are then stated for convenience. At the right-hand end of the table are the similar death-rates for the youngsters who join the trades, ages 15–20 and 20–25. The last line at the foot gives the figures for the Royal Navy in 1901, very much less than those of the Merchant Marine; but the Navy is a much younger service, having, in 1901, 61 per cent. under 25 years of age, while the other service had only 52.

In our examination of this table we will notice that between ages 25 and 65 the highest figure for total deaths and for deaths from phthisis were those of "general labourers," but that seamen in the Royal Navy had a very high death-rate from accident, though it was only half that of their professional brethren in the Merchant Marine, who had besides nearly three times the death-rate from phthisis the coal-miners had, and twice their death-rate from accidents. Between ages 15 and 20 merchant seamen had by far the highest death-rate from accidents; while coal-miners had three times the average, merchant seamen had a death-rate three times greater still—nine times the average. From ages 20 to 25 conditions are very similar, merchant seamen having again the highest death-rate of all, one very high for phthisis and the highest for death by accidents. It will also be observed that the young (ages 15–25) seamen in the Royal Navy had a risk of death from accidents higher than that of any other employed males, excepting only those of the merchant service. We should observe, too, how the risk of death from phthisis increases after 20 years of age. The mortality of agricultural labourers and coal-miners from phthisis is very similar at all ages, but that of merchant seamen is always about three times as great—six times above that of the Royal Navy, though only twice as high from accident. From all of which we learn from the Registrar-General that boys who go to sea take on them a double risk of phthisis, but nine times the ordinary risk of death by accident. As Horace, though he did not know all this any more than they do, truly remarked, *Illi robur.*

This table, and the conclusions we have been able to draw from it, emerge from a Government publication of 1908 *discussing conditions of 1900–02, not to-day's;* but they suggest that at that time, 20 years ago, merchant seamen had a mortality from all causes and from phthisis 50 per cent., and from accidents 400 per cent. greater than that of the ordinary citizen. Yet even here we have not a full statement of the risks of merchant seamen at that time.

It has long been complained by those who concern themselves with the health records of merchant seamen that there are no complete statistics of the deaths that occur amongst them, a complaint voiced *most clearly* and with fullest knowledge by Dr. J. Howard-Jones, M.O.H. of Newport (Mon.), whose paper in the *Journal of the Royal Sanitary Institute* (1915, p. 124) will well repay re-perusal. As he points out, we have two sources of information about the deaths of seamen, one the occupational mortality supplement to the Registrar-General's report on each census, which we have just been considering, the other the return of the deaths of seamen, issued annually by the Board of Trade. Unfortunately, as Dr. Howard-Jones remarked, they are not complementary to one another, and cannot be combined to give us the whole truth. Deaths of seamen occurring abroad are not registered with the Registrar-General, and do not come into his calculations at all. Thus he reports (1900–02) an average annual number, 354, of deaths among merchant seamen from accidents, but the Board of Trade put the deaths from accidents in 1901–02—not, so far as appears, an exceptionally heavy year—at 973 (unpublished return I was kindly allowed to see at the Board of Trade and copy). This figure suggests that seamen have a death-rate from accident far higher than the Registrar-General propounds, a death-rate of 7 or 8, instead of 3·75. On the other hand, the Registrar-General's average for deaths from phthisis being 301, the Board of Trade only mentions 45. Why is that? The explanation lies in the purpose of the Board's return, and in the nature of that chronic and insidious disease. The Board of Trade only concerns itself with the deaths of seamen while on ships' articles or in the hospitals to which they have been discharged sick from their ships; it has nothing to do with them before or after. So a man found at Port Said to have phthisis and there discharged to hospital will, if he die on the spot, be noted in the return; but if he recover sufficiently to take passage home after his discharge, and subsequently dies at home without again going to sea, his death will not be shown in the Board's return; it will be registered with the Registrar-General, when, if the local registrar elicits from whomever does register the death that the deceased was a sailor, his death will be classified with those of seamen, and if otherwise, otherwise. Then there are also the cases, discussed by Dr. Howard-Jones, of the men who, having begun while employed as seamen to develop phthisis and so to lose strength, realise they are not fit for work at sea and consequently take up some other lighter trade and die in that; these men are no longer mentioned as seamen, though it was in ships their phthisis was contracted. It will be convenient here to put side by side (Table II.) the Registrar-General's account of the deaths *of merchant* seamen, taking the average of three years, and the Board of Trade's statement for 1901–02.

When these are examined it becomes clear there is no relation between them. The populations stated for each are so very different, and [the figures shown in Table III.] evidence the very various distributions, per 1000, of the ages among the 97,065 seamen who, in the census of England and Wales, stated seafaring as their occupation (Registrar-General), and among the 117,558 * seamen who gave their ages (15–75) when the census was taken on board British ships throughout the world (Board of Trade), both on March 31st, 1901. The differing distributions suggest that of the younger men more are abroad, as there are more in the census of seamen, of the older more at home, and so more older men amongst the seamen in the census of England and Wales. The figure, 140,860, is the probable number of British seamen in the "first crews" of British ships, annually mentioned by the Board of Trade as an indication of the number of seamen there are. It is quite valueless for calculating a death-rate. On the whole, the Board of Trade's return probably gives an exact figure of the deaths of seamen in their ships, and a tolerable approximation to the causes, but it gives us no population figure by which to calculate a death-rate, as Sir P. Cunliffe-

TABLE I.—MORTALITY OF MERCHANT SEAMEN AND OTHERS.
Registrar-General's Report [Cd. 2619, 1908].

| Part II. Supplement to Sixty-fifth Report. [Cd. 2619, 1908]. | | Group. | Number of men in group. | Chief cause of death for the group. | Ages 25–65. | | | | | | 15–20. | | | 20–25. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Comparative mortality figures (deaths per 71,005). | | | Death rates (deaths per 1000). | | | Death-rates. | | | | | |
| Reference number. | Page. | | | | Total. | Phthisis. | Accident. | Total. | Phthisis. | Accident. | Total. | Phthisis. | Accident. | Total | Phthisis. | Accident. |
| — | 2 | All males (occupied and retired) | 10,463,280 | Phthisis | 1000 | 187 | 69 | 14·08 | 2·62 | 0·70 | 3·5 | 0·8 | 0·4 | 4·8 | 1·7 | 0·5 |
| — | 3 | All occupied males | 9,560,523 | Phthisis | 925 | 175 | 68 | 13·03 | 2·40 | 0·70 | 2·4 | 0·5 | 0·4 | 4·4 | 1·5 | 0·5 |
| 21 | 34 | Farm labourer | 546,138 | Circulatory disease | 572 | 82 | 53 | 8·05 | 1·15 | 0·75 | 1·7 | 0·3 | 0·4 | 3·5 | 1·0 | 0·6 |
| 83 | 131 | Coal miner | 609,102 | Accident | 840 | 85 | 123 | 11·91 | 1·20 | 1·73 | 3·2 | 0·4 | 1·2 | 4·5 | 1·0 | 1·2 |
| 95 | 149 | General labourer | 405,314 | Phthisis | 1987 | 450 | 120 | 28·05 | 6·33 | 1·09 | 4·4 | 1·1 | 0·7 | 9·0 | 3·2 | 0·9 |
| 17 | 28 | Merchant seamen | 97,065 | Accident | 1647 | 219 | 260 | 21·78 | 3·50 | 3·75 | 7·1 | 0·9 | 3·8 | 10·7 | 3·0 | 3·2 |
| Navy health 1901 | | Royal Navy | 98,410 | Accident | 503 | 44 | 150 | 7·1 | 0·62 | 2·1 | 15 to 25 | 50,930 men. 61 per cent. of total. | | 4·2 | 0·5 | 1·8 |

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* This figure on Table II., given as 120,412, includes "age not stated."

Lister allowed, and it neglects all deaths, sequelæ, of illnesses contracted in ships and not immediately fatal—all deaths, in fact, which occurred after discharge. It is, therefore, an under-statement; on the other hand, the Registrar-General's account, while including many of these deaths, does not concern itself with those occurring outside England and Wales, and its total population figure gives too small an idea of the number of seamen that there are.

Table II.—*Causes of Deaths of British Merchant Seamen About 1901.*

| Registrar-General, from [Cd. 2619, 1908] Part II. of his Supplement to his Sixty-fifth Annual Report. Average of three years, 1901–2–3. *Diseases.* | *Deaths.* | Board of Trade, from an unpublished return for 1901–2. (E. and O.E.) *Deaths.* A. | B. | *Diseases.* |
|---|---|---|---|---|
| | | | 2 | .. Beri-beri |
| | | | 11 | .. Cholera |
| | | | 35 | .. Enteric fever |
| Influenza .. .. | 23 | | | |
| | | | 28 | .. Malaria |
| | | | 1 | .. Plague |
| Pneumonia .. .. | 146 | 50 | | .. Pneumonia |
| | | | 3 | .. Scurvy |
| | | | 17 | .. Small-pox |
| Phthisis .. .. .. | 304 | 45 | | .. Tubercle (all) |
| | | | 7 | .. Venereal diseases |
| | | | 8 | .. Yellow fever |
| Rheumatic fever .. | 5 | 4 | | .. Rheumatism and rheumatic fever |
| Cancer .. .. .. | 132 | 6 | | .. Cancer |
| Gout .. .. .. | 1 | | | |
| Diseases of— | | | | Diseases of— |
| Nervous system .. | 171 | 50 | | .. Nervous system |
| Circulatory system .. | 299 | 126 | | .. Circulatory system |
| Respiratory system .. | 126 | 24 | | .. Respiratory system |
| Digestive system .. | 93 | 75 | | .. Digestive system |
| Urinary system .. | 97 | 32 | | .. Urinary system |
| | | | 22 | .. Heat stroke |
| | | | 5 | .. Homicide |
| Suicide .. .. .. | 25 | 69 | | .. Suicide |
| Accident . .. .. | 354 | 882 | | .. Accident. |
| Alcoholism .. .. | 27 | 19 | 101 | .. Alcohol * |
| Other .. .. .. | 281 | | 31 | |
| Total .. .. | 2084 | 1382 | 271 | |
| | | 1653 | | .. Total |
| Population (census, England and Wales) .. .. | 97,065 | 120,412 | | Population (census of seamen) |
| Death-rate .. .. | 21·5 | 13·72 | | .. Death-rate |

| | | | | | |
|---|---|---|---|---|---|
| Diseases .. | 1678 | 80·5 % | 34 % | 555 | .. Diseases |
| Alcohol .. | 27 | 1·3 % | 7 % | 120 | .. Alcohol |
| Accidents .. | 379 | 18·2 % | 59 % | 978 | .. Accidents |
| | 2084 | 100·0 % | 100·0 % | 1653 | |

A = Parallel to those of Reg.-Gen. B. = Other.
* Direct and contributory.

That the Registrar-General gives six times as many deaths from phthisis (304) as are found in the Board of Trade's return (45), rather supports Dr. Howard-Jones' opinion that for every man who dies of phthisis in his ship, and is noted in the Board of Trade's return, there are nine others attacked. This under-statement of phthisis deaths, Dr. Howard-Jones tells us, led a former President of the Board of Trade to try to prove that phthisis was less fatal at sea than on shore, which we know is not the case. Similarly, it will be noticed, the Registrar-General gives for pneumonia 145 deaths annually, but the Board of Trade, for 1901–02, only 50. It seems likely that some of these others occurred while men were waiting for ships, and were due to bad lodging, insufficient food or clothing, in various proportions. The figures for cancer, 132 and 6, are also strikingly different. A word must be said about deaths from alcohol. The Registrar-General gives 27, probably all acute; the Board of Trade shows 19 due to acute alcoholism, but separates 10 from the "suicides" and 91 from the deaths from accident as deaths "to which drink was a contributory cause." In the re-arrangement of the lists necessary so that they might be compared, these have all been included under alcohol, to which the deaths are more properly attributable.

It must now be clear to all that in 1900–02 there was no complete account anywhere of the causes of the deaths of seamen, but that what figures there were showed that 20 years ago the mortality in this employment was very high indeed, judged by the experience of other trades. In the second part of this paper endeavour will be made to show how the figures available for the deaths of seamen in 1921 appear to compare with those for the rest of the population. Fortunately, great and beneficial changes have occurred at sea in the interval. Food and cooking are better, and accommodation also. Mr. Havelock Wilson, in his wonderfully interesting book, "My Stormy Voyage through Life" (p. 200), says it is now quite common for owners when building a new ship to consult the National Sailors' and Firemen's Union as to possible improvements. That sailing ships are dying out has greatly diminished the number of deaths from accidents. Another great benefit, the provision by the Ministry of Health of treatment centres for venereal diseases, their extension to foreign ports, and the International Treatment Card (V. 44), promoted by the British Social Hygiene Council to secure continuous, consistent treatment, will in a few years materially lessen the deaths of seamen.

Table III.—*Proportion of Age-Groups per 1000 Men in 1901.*

| Ages. | Regist.-Gen. Census of England and Wales. All males. | Regist.-Gen. Census of England and Wales. Merchant seamen. | B. of T. Census of Seamen. Merchant seamen. | Royal Navy. |
|---|---|---|---|---|
| 15–20 | 156 | 88 | 98 | 609 |
| 20–25 | 143 | 156 | 200 | |
| 25–35 | 122 | 143 | 167 | 297 |
| | 121 | 143 | 167 | |
| 35–45 | 94 | 105 | 104 | 78 |
| | 94 | 105 | 104 | |
| 45–55 | 68 | 75 | 59 | over 45 16 |
| | 68 | 75 | 59 | |
| 55–65 | 44 | 41 | 19 | |
| | 44 | 41 | 18 | |
| 65–75 | 23 | 14 | 2½ | |
| | 23 | 14 | 2½ | |
| | 1000 | 1000 | 1000 | 1000 |

But 1921 must be left to another occasion, and in the meantime we may reflect on the curious arrangement which takes the men the Ministry of Health has cared for all their childhood and most of their youth, transfers them to the less expert medical care of the Board of Trade for their working life, and then returns them, many of them "broken in the wars," again to the Ministry of Health, which has had no watch over them meanwhile. Surely it would be better that the Ministry of Health should have the responsibility for them throughout. It would then, in five years anyway, be able to tell us, though that is beyond the Board of Trade just now, what is the absolute waste of life due to seafaring—not really a very difficult matter for medical experts. Then the industry would know what insurance should be paid for each man, and the invalids would not be unloaded on to the public, as no doubt happens now, however much is borne by charity. Then the Ministry of Health, continuously responsible for the health of merchant seamen and for their insurance funds, would be encouraged, for financial reasons, to enforce the best preventive measures, for, unlike the Board of Trade, it would remain responsible, not only for the men sick and injured while they were in service, but also for the invalids after discharge, whose number it would have every interest to reduce, and every inducement to see were kept revenue-producing and self-supporting, as long as possible.

The late Dr. W. A. Holmes.—After 40 years of general practice in Barrow Dr. William Albert Holmes died on March 29th at the age of 68. He graduated M.B., C.M. at the University of Edinburgh in 1884, became M.D. with honours two years later, and took the D.P.H. at Cambridge in 1890. As a young man he was a keen cricketer. For many years he was surgeon to the borough police, and his work in this appointment was much appreciated in the district. Dr. Holmes's wife died about a year ago; he leaves two sons and a daughter.

# MEDICINE AND THE LAW.

### *Death from Unnatural Cause: Common Law Duty to Notify.*

DURING the debate on Mr. Tinne's Births and Deaths Notification Bill, Sir Richard Luce moved an amendment that where the cause of death was unknown to the medical practitioner, or where death appeared due to violence, neglect, poison or other unnatural cause, or seemed to be the result of an anæsthetic, he should not grant a certificate, but should forthwith report the circumstances to the coroner. This Sir Kingsley Wood resisted on the ground that the amendment would impose as a statutory duty what was already the duty of the medical practitioner at common law, apart from statute. This objection was legally correct, but so little is this common law duty known that there would have been no harm in embodying it in statutory form. At common law there is a duty upon any person about the deceased to give notice in such a case if Parliament has not already thrown upon any particular person the burden of informing the coroner of the death. It is not a duty of the doctor as doctor, but of any person who is in a position to give the information. This common law duty is complied with either by informing the coroner's officer or by telling the nearest policeman. Its origin is very ancient. It goes back to the twelfth and thirteenth centuries, when the finder of a person feloniously slain was expected to raise the hue and when townships might be amerced for failing to send for the coroner. Exactly what is the purport of the word "hue" it is hard to say; we know it best in the form "hue and cry" (*hutesium et clamor*). Possibly, said the late Prof. Maitland, the proper cry was "Out! Out!" and therefore the word is *uthesium* or *hutesium*. At any rate, out the neighbours would come with their bows and arrows and their knives and there would be shouting and horn-blowing, and the hue would be "horned" from vill to vill. But we no longer live in the age of bows and arrows; we no longer raise the hue and follow the cry. Sir Richard Luce's amendment would have laid down some definite guide for the medical practitioner in doubtful cases, and it is perhaps a pity that he was induced to withdraw it on the ground that it might have infringed the obscure and almost obsolete procedure under the common law.

### *Dangerous Drugs Act Prosecution: Failure to Enter Purchase in Register.*

Dr. Samuel Grahame Connor, of Dryden Chambers, Oxford-street, was summoned at Marlborough-street police-court at the end of last month for failing on three occasions to enter, in a register kept for the sole purpose, a certain quantity (50 gr.) of morphine purchased by him. A fourth summons charged him with failing, in a prescription of morphine, to specify the address of the person for whom the prescription was given. Dr. Connor pleaded guilty to the four charges, and was sentenced by Mr. Cancellor to two months' imprisonment in the second division on each of the first three, and to a fine of £50 on each summons, making six months' imprisonment in all and £200 fine. Notice of appeal was given.

Dr. Connor was stated by the police to be a drug specialist and to have as patients several addicts known to the police. One of these, a Miss Young, had been convicted of forging a prescription in Glasgow, and Dr. Connor was found to be sending her morphine from London. When told that she was being treated by another doctor, Dr. Connor said he would discontinue treating her himself. A year later she was again interviewed by the police, and in the sequel an inspector called to see Dr. Connor's register. Dr. Connor kept no register, but produced a day-book showing dates on which prescriptions had been given. Between Jan. 25th and Dec. 27th of last year, it was stated, he had prescribed 575 gr. of morphine on 13 occasions and had only seen the patient six times. A firm of chemists produced their register showing in all 850 gr. ordered; only one prescription was for Miss Young; there were many orders signed by Dr. Connor and headed "for surgery use only." These orders, the prosecution contended, were not "prescribing" but "supplying" within the meaning of the Dangerous Drugs Acts. On behalf of Dr. Connor it was urged that his day-book was open to inspection and that no attempt was made to mislead anyone or conceal anything. The magistrate, however, refused to treat the case as a merely nominal breach of regulations, and, apparently influenced by the suggestion that the accused had been amply warned by the police and that his drug practice was on a substantial scale, inflicted what certainly seems a remarkably severe penalty.

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# IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *Census of the Irish Free State.*

ARRANGEMENTS are now complete for taking a census of the Irish Free State, and "Census night" is fixed for April 18th. Forms have been distributed by the Civic Guard, and their collection will begin on Monday. The form, which is in English and Irish, contains 18 columns, in which information is required concerning occupation, nationality, birthplace, race, language, religious beliefs, conditions of marriage, relation to head of family, issue born in marriage, and houses and buildings inhabited or uninhabited or in course of erection.

### *Women's National Health Association.*

The annual meeting of the Women's National Health Association was held last week under the presidency of the Marchioness of Aberdeen and Temair. Dr. Alice Barry, in a report on the working of the babies' clubs, mentioned that the membership of the clubs was 8451; attendance of mothers at clubs, 27,166; infants, 17,098; and children, 20,082. There had been 10,040 medical consultations and 287 cases had been sent to fresh air and convalescent homes. Drugs and food had been distributed by the clubs at a reduced rate, or free to necessitous cases. Prof. J. W. Bigger moved a resolution urging public authorities to provide for the protection of milk, to ensure a free supply for children of from 1 to 5 years of age, and to make the public understand the value of milk as a food and the importance of having it hygienically treated. Dublin milk was very bad, but the increased demand for bottled milk showed that people were taking an interest in having better milk. Bottled milk, however, might be as dirty as any other. The public health authorities should, he suggested, protect the terms "Certified," or "Grade A," in relation to milk. There was at present no milk reaching Dublin under "Grade A" conditions. Other articles of food as well as milk required care in production and sale.

### *Queen's University of Belfast.*

The late Right Hon. J. C. White, formerly Lord Mayor of Belfast, left a bequest of £60,000 to Queen's University to endow a chair of biochemistry and lectureships in that subject and in bacteriology. The new biochemical laboratory was inaugurated on March 26th. The Vice-Chancellor of the University, who presided, pointed out the great and growing importance of biochemistry; it seemed to be the department in which most progress was to be hoped for in the immediate future. The Lord Mayor of Belfast, Sir W. P. Turner, in proposing a vote of thanks to Mrs. White for unveiling the memorial tablet, dwelt on the public services of her late husband, and on the prosperity and progress of the Belfast Medical School. Prof. J. A. Lindsay, in seconding the motion, pointed out that universities were largely dependent on private benevolence, for experience had shown that they could not expect to derive more than a third of their income from students' fees. The contributions of the State and of municipalities to university education had in the past been somewhat meagre, but recently there had been some advance. America gave a splendid example of private beneficence in support of universities, and the proportion of university students to the population in that country—1 to 300—was the highest in the world, Scotland being a good second with 1 to 400, and Germany third with 1 to 600. He hoped that the White bequest would be a stimulus to further benevolence in Northern Ireland.

The chair of biochemistry is held by Dr. J. A. Milroy.

# Public Health Services.

## THE INFLUENZA EPIDEMIC IN GLASGOW.

Although reports in the daily press have exaggerated the position, there has undoubtedly been an epidemic of influenza in Glasgow during the last few weeks. Dr. W. G. Clark, assistant medical officer of health for the city, has kindly supplied us with the actual figures of deaths from certain causes during the five weeks ended April 10th. These are as follow:—

| — | Week ending— | | | | |
|---|---|---|---|---|---|
| | March. | | | April. | |
| | 13th. | 20th. | 27th. | 3rd. | 10th. |
| Influenza .. .. .. | 2 | 8 | 25 | 60 | 83 |
| Pneumonia . .. .. | 31 | 39 | 87 | 119 | 98 |
| Bronchitis .. .. .. | 14 | 20 | 38 | 54 | 36 |
| Other respiratory diseases | 7 | 4 | 5 | 7 | 4 |
| Encephalitis lethargica .. | — | — | 1 | 4 | 1 |
| Total deaths from all causes | 295 | 346 | 452 | 598 | 484 |
| Death-rate per 1000 .. | 15·4 | 17·4 | 22·5 | 29·3 | 24·1 |

The normal number of deaths from pneumonia in Glasgow at this season is round about 30 per week, while those from influenza are usually under 10. In January of 1922 and March of 1924 there was a definite prevalence of both these diseases, that of 1922 being heavier than the present. Contrary to current popular statement there has been no significant increase in the number of cases notified as encephalitis lethargica during this period.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 3rd, 1926.

*Notifications.*—The following cases of infectious diseases were notified during the week:—Small-pox, 130 (last week 178); scarlet fever, 1564; diphtheria, 970; enteric fever, 42; pneumonia, 1376; puerperal fever, 38; cerebro-spinal fever, 5; acute poliomyelitis, 4; encephalitis lethargica, 38; continued fever, 1; dysentery, 7; ophthalmia neonatorum, 93. There were no cases of cholera or plague notified during the week. There was no further case of typhus fever notified during the week, although the return omits to state so.

*Deaths.*—In the aggregate of great towns, including London, there were 8 (1) deaths from enteric fever, 107 (44) from measles, 8 (2) from scarlet fever, 66 (8) from whooping-cough, 50 (16) from diphtheria, 46 (10) from diarrhœa and enteritis under 2 years of age, and 223 (48) from influenza. The figures in parentheses are those for London itself. The notified deaths from influenza are 87 in excess of the previous week. The measles deaths have now exceeded 100 for seven weeks in succession.

The late Dr. J. A. Guthrie.—Dr. James Ashton Guthrie, who died at his home at Halifax on April 3rd in his 85th year, was the son of Mr. Daniel Guthrie, of Brierley Hill, Staffordshire, and was educated at Queen's College, Birmingham. As a young man he went to Halifax as an assistant, and seven or eight years later moved to Edinburgh, where he remained for five years until in 1885 he took his degree as M.B., C.M. Returning to Halifax he remained in general practice until 1911. He was keenly interested in scientific developments and was an active member of the Halifax Scientific Society.

# Correspondence.

"Audi alteram partem."

## THE PROBLEM OF MALIGNANT DISEASE: A VIEW.

*To the Editor of* The Lancet.

Sir,—In the Registrar-General's Statistical Review of England and Wales for the year 1924 it is stated that the mortality from cancer has been steadily rising since 1884, and during 1924 there were more deaths from this cause than in any previous year for which official records had been kept.

In the face of such an official statement, is it not time we began to question the wisdom of our present methods and seek something better if it can be found? Surgery has failed to meet the situation, and we have the testimony of one of the most eminent members of this branch of the profession that no further elaboration of surgical technique can make any difference; so that it may fairly be said that we have arrived at a "dead end." The mortality steadily increases—this in spite of the fact that surgical methods and technique have been steadily improving year by year. Also it is to be remembered that the surgeon has the best possible chance to make good. All cases come to him in the first instance. He keeps the early and operable ones to himself, passing the inoperable and hopelessly incurable on to others. His statistics are naturally based on the former and yet the results are scarcely satisfactory, as most surgeons are quite ready to admit. Such, very briefly, is the present situation, and however much we may wish to change it the alteration is not going to be an easy one.

An important reason for this is the present tendency for patients to be taken directly to the specialist in a particular method of treatment, and on the principle that "there's nothing like leather," his own methods are used. For this reason, among others, I deplore the elimination of the pure consultant from our medical service. From him at least we could count on getting some sort of independent opinion—more than can be said of our present system, which is not only antagonistic to the best interests of the patient, but is a formidable barrier to progress in the healing art.

It is a cardinal principle of medical service that when we are called upon to deal with some disability we should exhaust the possibilities of such curative agents as are at our disposal before resorting to surgical interference. The most important exception to this rule is malignant disease, and however correct this may have been at one time it is very doubtful if it can be considered so now.

Of the multitude of things that from time to time have been suggested as a possible cure for malignant disease, the gamma ray as derived from the X ray tube or from radium is the only one that has shown itself to have any real value. (It is true that lead is showing some promise, but while hoping for the best we must be patient for the present.) The fact that the ray has a more than ordinarily prejudicial influence on the development of the malignant cell has been known to us for nearly 25 years, and the question naturally arises: What have we done to establish the real and full value of radiation in malignant disease?

Personally I am of the opinion we have done very little, but I hope I may not be misunderstood. I know that an enormous amount of work has been and is carried on, and it is far from my wish to disparage it in any way, but almost all of it is concerned with advanced cases, many hopelessly incurable, and also those that have been through the hands of the surgeon, which seriously impairs any chance of success from radiological methods. Experience gained under such conditions has its value, especially if it serves to give relief to the patient and prolong life under comfortable conditions. It teaches us no more, however, than we have known for a long time past, but as for dealing with the main problem we are not getting any "forrarder."

Notwithstanding the magnificent work that has been done at Erlangen for years past it never seems to occur to anyone here to give radiation a chance to show what it can do, in competent hands, for cases of malignant disease in early and curable stages, and before the surgeon has so mutilated the tissues as to make radiological methods ineffective. Under present conditions once a case is turned over to the radiologist it means, with very few exceptions, that it is only a question of time, and seldom a long one. So that while we have at our hand an agent which by general admission possesses curative powers over malignant disease, our general practice is to confine its use to the less curable cases.

Let us consider for a moment what has been going on in the Erlangen clinic for some years past. In my original communication to the Royal Society of Medicine in December, 1920 (THE LANCET, 1921, i., 24), I related the results obtained in carcinoma of the uterus—such cases as would be deemed favourable for operation here and dealt with accordingly. These results were so superior to those obtained by surgical methods that for some time surgery had been abandoned for cases of malignant disease of the female pelvis, and now five years later, this is still the rule of the clinic. The attitude has been to discredit these claims; yet Prof. Wintz's clinic has been freely open to anyone who cares to come and make an honest investigation, and it is quite certain that if there was anything about it that was not quite straight it would have been found out long ago, and incidentally the practice of the clinic would have been altered. Furthermore, Prof. Wintz attended the First International Radiological Congress held recently in London, in the course of which he gave his results of the X ray treatment of cancer of the breast. Here, again, the results were uniformly better than obtained by surgery, and, as he rightly emphasises, only the results obtained by the best surgeons are admissible for comparison.

It might be thought that some very serious notice would have been taken of a communication of such overwhelming importance. One almost blushes to relate that it has been passed over with scarcely a nod of recognition, those who now have the first say in the treatment of cancer in this country not welcoming the new departure. They base their attitude on the contention that early operation is the best and only method of dealing with malignant disease, and what with constantly preaching this doctrine, teaching it to students, and the publication of articles and pamphlets for public consumption, the profession and a large part of the educated public have got the idea that there is no treatment for malignant disease and that the only hope lies in the efforts of the surgeon. Enthusiasts are working hard at cancer research all over the country, but for all the time, work, and money spent they have not brought us appreciably nearer the desired end.

If I were asked the main reason for this failure I would say it is because all this work is dominated by the surgical view, which is definitely antagonistic to any change in present practice. How else are we to account for the fact that as yet no proper effort has been made in this country to test the results obtained at Erlangen? There are plenty of sets of apparatus such as are used there, and we have men in charge of them quite able to use them to the best advantage—if they get the chance. But the surgeon retains the favourable cases, and on these he bases his statistics. All the advanced and inoperable cases, as well as the failures of his own work, he passes on to the radiologist, and it is on the results attained on these—quite beyond surgery to cope with—that he bases his opinion of the value of radiation in malignant disease. For those who are prepared to go into this question with an open mind there is ample evidence to show that when working under equally favourable conditions radiology can show at least as good results as surgery without any of the risks and mutilations involved in the latter. While it may be a fine thing to relieve a patient of a malignant lesion by operation, it is a much finer thing to get the same result leaving the individual intact. That this can be done is shown by the results attained at Erlangen, and I firmly believe in the possibility of repeating them here because of the high degree of success I have had in the relatively few early cases of malignant disease that have been referred to me before there had been any surgical interference. I wish to emphasise the fact that success after radiation depends on free and active blood and lymph circulations. This essential condition cannot be met in an area that has been the site of surgical interference, and this is one more, and a very important, reason why, if we are to make any definite progress in our methods of dealing with this problem, the surgeon's attitude must alter. Surgery can secure but a very moderate degree of success; alternative methods are tested only under the most unfavourable conditions.

I think it is more than time the Erlangen technique were given a fair and honest trial, and if carried out faithfully I predict with the utmost confidence that the lot of the unfortunate victim of malignant disease will be altered for the better—mentally, physically, and materially. I appeal to the profession as a whole, and particularly to general practitioners, to look into this question most carefully; to accept no evidence from either surgeons or radiologists as gospel truth, but only at its real value, allowing a reasonable discount for personal interest, and see if it does not seem worth while giving their patients an alternative to the knife—the most crude method of dealing with any disease our unfortunate bodies are called upon to bear. I am, Sir, yours faithfully,

REGINALD MORTON.

Park-crescent, Portland-place, W., April 7th, 1926.

# A COMPENSATION PROBLEM.

*To the Editor of* THE LANCET.

SIR,—Your correspondent "Practitioner" (THE LANCET, April 3rd, p. 730) asks for views on the relation of injury to tumours of the testicle. A history of preceding injury to the testicle is obtained in 10 to 20 per cent. of the cases of testicular tumour—some writers give a higher figure—and the majority of observers incline to regard the injury as a definite cause of the neoplastic process. But, as I pointed out in a recent Hunterian lecture, it is difficult to reconcile this view with the fact that, although almost every active male receives at some time in his life a severe blow on the testicle, tumours of the testicle are rare. On an average three cases are treated in each year at the London Hospital. From an extremely interesting case reported at some length in my lecture it appears most probable that the part played by injury is not to initiate the neoplastic process, but rather to stimulate to more rapid growth a pre-existing but hitherto unobserved tumour. Whichever of these views be the correct one there is a case for compensation if it can be proved that the testicular swelling only became apparent after an injury to the testicle. But there is no reason at all to suppose that an injury limited to the back, such as occurred in the case brought forward by "Practitioner," could have any possible influence on the behaviour of a scrotal testicle.—I am, Sir, yours faithfully,

H. W. B. CAIRNS.

London Hospital, E., April 6th, 1926.

*** Mr. Cairns's lecture will shortly be published in THE LANCET. We have received other replies to "Practitioner's" questions from surgeons who desire to remain anonymous. One writes: "Some important points are wanting in the clinical history supplied by 'Practitioner.' Was there any direct injury to the testicle, and did the patient report pain or tenderness immediately after the accident? Was there any subsequent swelling of the testicle or bruising of the scrotum? Was the testicle fully or imperfectly descended? Was the growth of the mixed form that is recognised as congenital?

"Assuming that there was no local injury to the testicle, the growth could not, by any stretch of imagination, be ascribed to the injury. A single direct injury on normal testicles has not, so far as I know, ever been proved to cause a new growth. It has been claimed, although I very much doubt it, that repeated injuries to an imperfectly descended testicle are the cause of new growth. If the testicle was imperfectly descended there is no need to attribute the growth to a single injury, for the frequency with which growth develops in such a testicle, apart from injury, is recognised. If the histology is that of a mixed growth, the congenital origin, apart from injury, is clear. In any case there is nothing to connect the appendicitis with the injury or with the orchidectomy."

Another surgeon writes: "In regard to the testicle, it is well known that in the majority of testicular tumours there is a history of injury some time before the appearance of the tumour, and the injury is accordingly accepted as having some ætiological significance. In this case, however, we can safely assume that the tumour was a very slowly growing one because 18 months were allowed to elapse between its recognition and its removal; and as the injury occurred only four weeks before the first recognition of the swelling in the testicle, one is safe in maintaining that it must have been present before the accident. Arguing on these lines I feel confident that a claim for compensation cannot be maintained. In respect of the attack of acute appendicitis I should give a strong expression of opinion against the accident having had anything to do with it at all. Trauma as an ætiological factor in appendicitis is a very debatable point and the balance of opinion is against it. Anyway, in this case it seems out of the question to blame an accident 19 months previously for a subsequent attack of appendicitis."—Ed. L.

## UROTROPINE, CITRATE OF SODA, AND BROMIDE OF AMMONIA IN THE TREATMENT OF EPILEPSY.

*To the Editor of* The Lancet.

Sir,—Recently I have investigated the treatment of epilepsy in the light of my belief that an important factor in the causation of this disease is the colon bacillus; and the one outstanding result of my investigations is the discovery that the power possessed by ammonium bromide of preventing epileptic fits is decidedly raised by administering with this remedy urotropine and citrate of soda. In almost every case of fits under my care I now give two separate prescriptions, as follows:—

(1)

℞

Ammonium bromide .. ʒiv
Urotropine .. .. .. ʒii
Chloroform water to .. ℥vi
Sig.: Take one tablespoonful in water night and morning.

(2)

℞

Sodium citrate .. .. ℥vi
Sig.: Take one teaspoonful in half a tumblerful of water night and morning.

Under the action of the medicines shown in these two prescriptions the fits in all my cases have so far disappeared. In one remarkable case of hystero-epilepsy, where attacks were occurring at the rate of three to eight a day, and where 20 gr. of bromide, thrice daily, failed to control them, the use of these prescriptions in a short time caused them to cease. The following is a record of a case which has been under observation for a considerable time.

A. B. C., a male aged 44 years, has been suffering from fits for 20 years. From 1907 to 1917 he took, without much benefit, about 20 gr. of bromide twice daily. In February, 1917, he came under my care, and although I gave him large doses of the mixed bromides night and morning, he continued to have fits at varying intervals to September, 1924. The following is an accurate account of his seizures: 1917, six; 1918, nine; 1919, ten; 1920, four; 1921, seven; 1922, six; 1923, six; 1924, four. On Sept. 16th, 1924, I prescribed 20 gr. of bromide of ammonia to be taken night and morning, and one teaspoonful of citrate of soda to be taken with each dose of bromide. Subsequently I added to each dose of the bromide mixture 10 gr. of urotropine. The result is that the patient's fits have ceased and that up to the date of writing there has been no recurrence.

No unpleasant by-effects have appeared in any of the cases treated with urotropine and citrate. I have also tried benzoate of ammonia, but as this seemed in some instances to depress the patient's spirits and to derange his digestion I have nearly ceased to prescribe it. Further investigation will show to what extent the daily dose of bromide could, in course of time, be reduced.—I am, Sir, yours faithfully,

E. J. McC. Morris, F.R.C.S. Edin.

Poynders-road, S.W., April 10th, 1926.

## FAMINE IN THE TROPICS.

*To the Editor of* The Lancet.

Sir,—In my letter on the above subject which appeared in your issue of March 13th, on referring to the "1 lb. ration" instituted by the Government of India against the strenuous advice of Cornish, I stated "from Jan. 31st, 1876, to May 22nd, 1877, this diet was in force." In both instances the year quoted should have been 1877. As the context shows famine was not officially recognised till October, 1876, the discrepancy is apparent; but seeing that the results of error in nutrition both in individuals and populations must be estimated not only as to its nature but in the light of duration of its incidence, I venture to ask your permission to correct the slip of diction for which I am responsible, lest the casual reader be misled. Had the "1 lb. ration" been in force for the longer period, a diminution not of 3,000,000 of the population of the affected districts, but a great multiple of that number would have been inevitable.

I am, Sir, yours faithfully,

W. G. King,
Colonel, I.M.S. (retd.)

Hendon, N.W., April 5th, 1926.

## POSTURE IN EMPYEMA CASES.

*To the Editor of* The Lancet.

Sir,—In Mr. Twistington Higgins's most interesting article on empyema in children which appeared in The Lancet of March 20th, there is one piece of advice with which I would join issue. It reads as follows:—

> "Once the tube is out the child should be encouraged to lie on the good side and deep-breathing exercises should be continued."

Presumably this indicates that it is the opposite side—i.e., the side where the resection of the rib was made—which will be given thereby a chance of functioning better than the sound side on which the patient is advised to lie. In an article of mine which appeared in The Lancet of April 26th, 1919, p. 697, on Gunshot Wounds and Other Affections of the Chest I wrote:—

> "Great assistance in making a collapsed lung function properly is rendered by bending the body away from the injured side, as the patient lies on his back. This position causes a partial collapse of the sound lung by mechanical pressure of the ribs. Also, when possible, the patient should lie on the injured side when preparing for sleep."

I have often been questioned about this advice, doubt being cast on the idea that it is the lung on the side on which the patient is lying that is getting more air than the opposite lung. From careful observation I believe that this is really so. The side on which the patient lies sinks into the bed in a convex position and apparently the lung functions freely, the opposite or upper side is mechanically compressed by the position assumed, and expansion is restricted. I therefore always advise patients with an empyema to lie on the back, as described, or on the side where the rib has been resected, both from a drainage point of view and for expansion of the lung.

I am glad that Mr. Higgins advocates having breathing exercises applied very soon after operation. Five days after operation is the earliest time in which I have been asked to give exercises, and in the war the average time was about 12 days. Patients were quite capable of starting exercises at this period, and I believe that, by getting quickly on to breathing exercises, not only was drainage helped, but the risk of adhesions and pockets forming was much lessened.—I am, Sir, yours faithfully,

CORTLANDT MACMAHON, M.A. Oxf.,
Instructor for Speech Defects and Breathing Exercises at St. Bartholomew's Hospital.

April 7th, 1926.

## PRINCIPALS AND LOCUM TENENTS.

*To the Editor of* THE LANCET.

SIR,—A letter from the Medical Defence Union which appeared in your issue of March 27th has led to inquiries as to the attitude adopted by the London and Counties Medical Protection Society where actions are brought against principals who are members of the Society in respect of the professional work of locum tenents who are not members of the Society.

Several years ago a case of the kind came before the Council of the London and Counties Medical Protection Society and it was undertaken on behalf of the member, although the locum tenent from whose work the claim arose was not a member of the Society. This did not involve any departure from the rule that one subscription should not be allowed to cover the work of two or an indefinite number of practitioners associated as principal and assistant. The Society was advised that a principal is not legally liable for the default of a locum tenent provided he has used proper care to make sure that the locum tenent is properly qualified and competent. The case referred to never went into court, but the Society has ever since undertaken any case of the kind and intends to do so.

The legal position is not as certain as could be wished, but the fact that cases in which the London and Counties Medical Protection Society has challenged legal proceedings have not resulted in proceedings being carried to trial by the other side seems to indicate that the view taken up by the Society of the legal position is well founded. When a case of the kind does come to trial it is more than probable that it will have to be taken to the House of Lords if a final decision is to be obtained, since the cases bearing on the question in the Court of Appeal are somewhat conflicting.

I am, Sir, yours faithfully,
HUGH WOODS,
General Secretary to the London and Counties Medical Protection Society, Ltd.

Victory House, Leicester-square, W.C., April 12th, 1926.

THE SEAMEN'S HOSPITAL.—From the 105th annual report of the "Dreadnought" Hospital at Greenwich, with its branches and convalescent homes, we learn that the re-modelling of the hospital, the erection of a pathological unit, and the provision of new quarters for the nurses are all being taken in hand. When these works are finished the "Dreadnought" will, it is stated, be "one of the most complete hospitals in the country." There are now two resident medical officers, the nursing staff has been enlarged, and the hospital has been recognised as a nurse's training school.

JERUSALEM OPHTHALMIC HOSPITAL.—The report of the Ophthalmic Hospital of the Order of St. John in Jerusalem shows that during the past year activity increased. Perhaps the most remarkable fact brought out is that, although for nearly three months only two British surgeons were on duty, there were more than 81,000 out-patients' attendances and 1107 operations. Light and power have been installed and the X ray department has been in working order for the last six months. 67 per cent. of the patients suffer from trachoma, "and most of the population continue to live under conditions which ensure its spread."

# Obituary.

## SIR HARRY BROOKES ALLEN, M.D. MELB., LL.D. EDIN.,

EMERITUS PROFESSOR OF PATHOLOGY, UNIVERSITY OF MELBOURNE.

Sir Harry Brookes Allen, one of the best known figures in Australian medicine, was born in 1854, the second son of Mr. T. W. Allen, of Geelong, was educated at the Church of England Grammar School and later at the University of Melbourne, and graduated in medicine at the age of 22. His ability and industry secured him the first place amongst his contemporaries both at school and at the University, and after a year's special study in Europe he returned to Melbourne and was immediately appointed assistant to Prof. G. B. Halford, who had held the combined chair of anatomy and physiology at Melbourne since the inception of the medical school. Shortly afterwards a redistribution of the chairs occurred, Halford retaining that of physiology while Allen was appointed professor of anatomy and pathology, a position which he held from 1882 until, and more than 20 years later, Prof. R. J. A. Berry relieved him of his anatomical duties. He was one of the first, if not the first, of the alumni of the University of Melbourne to occupy a professorial chair in his own University; previously the professors were imported from Europe, but the departure in Allen's case was more than justified.

The long tenure of a chair in which the studies of anatomy and pathology were combined is a good illustration of the best medical education of the time, before the growth of bacteriology reached its full importance in the medical curriculum; and at a small medical school, such as Melbourne then possessed, the combination of normal and morbid anatomy in teaching was found very valuable. Allen availed himself of his opportunities to the full, utilising the wealth of autopsic material at the Melbourne Hospital to which, as professor of pathology, he was the pathologist, for the teaching of anatomy as well as pathology. "All old Melbourne students," writes a very distinguished one to us, "will recognise the value of the opportunities they enjoyed to learn anatomy upon the fresh subject as well as in the dissecting room. Allen was a great teacher, if rather formal in methods. He demanded a high standard of effort from his pupils, but they all realised that he, on his part, spared no endeavour to provide them with an adequate training for their future medical studies. As a consequence, every medical student at Melbourne had a sounder basis of anatomy and morbid anatomy whereon to build than, I believe, is usually the case." As the outcome of his work he created the pathological museum of the University, and with a passion for order and arrangement he devoted all his spare time for many years to its enrichment.

The responsibility for both anatomy and pathology in a school of 300–400 students might justly have absolved him from taking an active part in administration, but the exact opposite occurred, for he found time and energy to act for upwards of 30 years as dean of the medical school. Here, like many anatomists before him, he showed an unusual capacity for affairs. Once a line of policy was determined, he was a master at organisation, and if, as a director of academic policy, he was, perhaps, too much influenced by precedent and more inclined to adopt than to adapt, he proved thoroughly successful. Nor were his administrative services confined to the medical school. Perforce, involved in the general administration and policy of the University, he was for many years an active member of the Council, and the governing body recognised in him an untiring and sagacious coöperator.

Allen was by nature a student rather than a discoverer, while his multifarious preoccupations with the teaching of two important subjects, the development of the school and the progress of the University left him little time for research. Nevertheless, his knowledge and experience of morbid anatomy was so comprehensive that if he had devoted some of the time unselfishly spent in public work to recording his observations he would have gained a wide reputation as a pathologist. Most of his observations on morbid anatomy which he did find time to record will be found in the medical journals of Australia and in the proceedings of various Australasian medical congresses. Amongst the more important are a series of papers on the ætiology of arterial degenerations, where he was one of the first to recognise the relation of certain types of degeneration to previous infection with syphilis.

Among his many activities there should be mentioned that he was, in his younger days, the editor of the *Australian Medical Journal*, and for some time honorary secretary of the Medical Society of Victoria. He was a member of the Central Board of Health for a period and also of the Board dealing with tuberculosis in cattle, in connexion with which he was early to perceive the developments that might arise from proper meat inspection followed by cold treatment. In 1908 he was President of the Australasian Medical Congress, and just before the war was appointed a member of the executive committee of the International Medical Congress.

Personally, Allen was formal in manner, always courteous and considerate and a loyal colleague, but outside his family circle there were few who were on terms of intimacy with him. He possessed a phenomenal memory, and could visualise whole pages of books and reports. This enabled him to remember a chain of reasoning where there was no need to follow the details—a very valuable quality in a much occupied man. As dean of the medical school for so many years, it was inevitable that one of his ability, personality, and capacity for affairs should come to exert a powerful influence within the medical profession in Victoria, and, in fact, he was for many years its recognised leader, always maintaining the best traditions. Some two and a half years ago he had a serious cerebral hæmorrhage from which he never completely recovered, since when he had been a complete invalid. He married the daughter of Mr. Henry Mason, of the Liverpool Customs, by whom he had three daughters.

## KATE MARION VAUGHAN L.S.A., D.P.H. CAMB.

WE regret to announce the death on March 29th of Dr. Marion Vaughan (née Hunter) at the age of 61. Dr. Vaughan had been in bad health for some years, but she was reticent about herself, and the news of her death has come as a shock to a wide circle of friends and patients. Marion Hunter was born in Flintshire, one of a family of seven, and was educated at the Blackheath and South Hampstead High Schools. Then, in early womanhood, came the question, in her circumstances inevitable, of a profession, and with the help of her uncle, the late Sir W. Wilson Hunter, she was able to enter the London (R.F.H.) School of Medicine for Women. From every point of view her training was a good investment, for she possessed the gifts and the character required in medical practice. As a student she was prominent in her year; from her earliest days her energy, practical ability, and extreme kindness to those in need of help were conspicuous qualities.

In 1894 she took the L.S.A. and later, from King's College, took the D.P.H. Cambridge. After qualifying she held the posts of clinical assistant and assistant anæsthetist at the Royal Free Hospital, and then, in 1898, went abroad to India and to Egypt, where she did valuable work combating plague in Government service. When she returned to England, she settled in South Kensington and began to build up the large general practice which afforded such a conspicuous testimony to the esteem in which her patients held her. In 1909 Marion Hunter married Percy Cecil Vaughan, barrister-at-law, and the happiness of their brief married life—Mr. Vaughan was killed in the war in 1915—coloured her whole subsequent career. Dr. Vaughan herself worked for a time in France at the Anglo-French Military Hospital, and another side of her war work was the foundation, in 1916, of the West Islington Welfare Centre. In this she had the coöperation of Mrs. Edward Moon. During the ten years which have elapsed since its foundation, the work at this centre has grown steadily from very modest beginnings until to-day West Islington is among the largest welfare centres in London. In addition to the out-patient side, at which last year there were 18,000 attendances, West Islington has from its beginning had a ward with 15 cots for sick and ailing babies, and here, above all, Dr. Vaughan showed her untiring devotion and skill. It was never too late for her to come from the other side of London to see a sick baby, and, indeed, the progress of this centre was one of the keen interests of her busy life.

Dr. Vaughan was eager to keep herself abreast of medical science. She took trouble to obtain special experience, especially in pediatrics, and worked for a time as assistant medical officer to the London County Council. Later she became keenly interested in the recent developments of light treatment, and last year initiated, with others, an artificial sunlight clinic in Mayfair. In everything she did she was quick and practical, wise and prompt in crises, of good judgment, and unfailing kindness to those who sought her help. It is no exaggeration to say that she accepted the troubles of her patients, and took their lives as well as their bodies under her care, in order to bring them into happier as well as healthier ways. Her gallant struggle against ill-health during the last four or five years was unperceived by many of them, so great was her self-control. Dr. Vaughan had an imperious manner, and her abrupt decisions were sometimes disconcerting to her friends, but many patients found in her just those qualities of strength and firmness which they needed for their support in times of trouble. The fact that early financial stress had prevented her from proceeding to take higher degrees and possibly to adopt the life of a consultant was a blessing to the many families who relied on her not only for sound medical advice but for common sense and kindly interest in their daily routine. In Dr. Vaughan Kensington has lost a practitioner of unusual skill and merit.

## FREDERICK WILLIAM AXHAM, L.R.C.P. EDIN.

Dr. F. W. Axham, who died on April 8th at the age of 86, received his medical education at St. George's Hospital, London, and qualified as M.R.C.S. Eng. in 1861; six years later he became L.R.C.P. Edin. by examination. Before settling down in England he saw service in China as surgeon-in-chief to the Franco-Chinese Forces and worked as north district surgeon and sub-immigration agent in British Honduras. Then he came back to London, where he practised for many years in Golden-square, and was medical officer to the Westminster Union Workhouse. In 1905 he began to be interested in the manipulative surgery of Mr. (now Sir Herbert) Barker, and watched him at work on many occasions. He consented to help Mr. Barker in his practice by administering anæsthetics, and during five years no complaint was made against this conduct. In 1911 an action was brought against Mr. Barker for damages, and in the course of the hearing Dr. Axham described his work. This led to his appearance before the General Medical Council in May of the same year, at the complaint of the Medical Defence Union, on a charge of having assisted an unregistered person to practise. Dr. Axham said that he realised that he had not followed the strict rules of the profession and must put up with the consequences rather than give an undertaking not to give anæsthetics for Mr. Barker in future. His name was removed from the Medical Register and his diplomas were withdrawn by the Colleges which had granted them. He continued to help Mr Barker, and in an unsigned letter to the *Saturday Review* (March 24th, 1917, p 270) explained that he was doing what he conceived to be his duty at considerable personal sacrifice

Dr Axham retired from practice some years ago, but it was not until 1025 that any application was made for his name to be replaced on the Medical Register Before the General Medical Council could take action it was necessary that Dr Axham should have one of his diplomas returned to him, and his reinstatement by the Royal College of Physicians of Edinburgh came too late for the Council to consider his application at its last meeting in November

The medical profession has had much sympathy with Dr Axham in the late phases of the contentions around him, though quite aware that the criticisms directed against the General Medical Council were frequently erroneous, and this in quarters where fuller knowledge might have been expected, and where the case was not being used as an opportunity to discredit the medical calling

## GEORGE SHERMAN BIGG, F R C S EDIN

Dr Sherman Bigg, who died on Easter Day in his seventy-first year, was educated at Overslade and Rugby Schools. He was a good athlete and swimmer and was captain of Fives at Rugby He studied at the Middlesex Hospital and became L.S.A. in 1876, M.R C.S in 1877, and F R C S Edin. in 1888 He joined the Army Medical Service and served as staff surgeon under General Macpherson at Allahabad and later at Dover, and also throughout the Egyptian campaign. On leaving the army he settled in practice in Victoria-street, Westminster Ill health compelled him to retire in 1028, and he suffered much up to the date of his death. He wrote a number of papers on hygiene in the tropics and child welfare

## HAROLD TURNER FINLAYSON, M B ,
## CH B ABERD

Dr H. T Finlayson, who has died at Formby, Lancashire, at the early age of 36, was the eldest son of Mr Boyd Finlayson, clerk to the Aberdeen Educational Authority, and had been in practice at Formby for about ten years He was educated at Aberdeen and at St Mary's Hospital, London, where he acted as casualty officer after graduating in 1912 After holding a number of house appointments in Dundee and elsewhere and spending some time as ship's surgeon in the East, Dr Finlayson saw service in the early days of the war with the Grand Fleet, and later held a commission in the R.A.M.C Settling in practice at Formby he kept in touch with many of the special departments of medicine and surgery, and was appointed clinical assistant in the Royal Southern Hospital, Liverpool, medical officer of the Holmewood School and Children's Sanatorium, Freshfield, and neurologist to the Ministry of Pensions The self-sacrificing way in which he did his work led him to overtax his strength Dr Finlayson had many and varied interests—athletic, social, artistic—and to any particular case in which he was engaged he brought a human touch, a sense of sympathy, and a hopeful outlook which made his services especially helpful

THE LATE DR. H T PRINGLE.—At the age of 85, Dr Henry Turnbull Pringle died on March 30th at Ferndown, Dorset, where he had been living for some years past. He was born in Roxburghshire and graduated in medicine at the University of Glasgow with first-class honours in 1800, proceeding to the degree of M D two years later On qualification he was appointed medical officer to the Glamorgan County Mental Hospital at Bridgend, and later became medical superintendent there In 1004 he relinquished the position, but retirement did not mean inactivity He was made a justice of the peace for Dorset in 1010 and three years later was appointed a member of the advisory committee for the appointment of magistrates in the county

# Medical News.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE: *Course in Physiology Applied to Hygiene.*—With the concurrence of the King's College Delegacy, Prof R J S. McDowall will deliver at the School a course of lectures, commencing May 7th, in physiology applied to hygiene. The course is primarily intended for students preparing for the diploma in public health, and the lectures are being given in pursuance of the policy of the Board of Management of supplementing, where necessary, the facilities for teaching for the D.P.H. available at other institutions, pending the development of the full scheme of teaching when the new school is ready In these lectures will be given the more modern aspects of those parts of physiology which form the basis of public health work and which are not yet easily available in book form. The syllabus of lectures is as follows:

1 *General.*—The body as a physical and mental machine, its relation to environment. The principles involved in promoting efficient longevity in a certain sphere

2 *Physical Work*—The response of the body to physical exercise. Its relation to health and to artificial exercises. The influence of use and disuse. Physical standards.

3 *Mental Work and Associated Phenomena*—The nervous system and the general principles of its function. Habit formation some aspects of psychology The influence of use and disuse.

4 *Fatigue and Overstrain.*—Muscular fatigue mental fatigue. Recovery The importance of sleep, variety interest, and alternation.

5 *Industrial Fatigue.*—Applications of the foregoing The sense of well being. Vocational tests, their principles, practice, results.

6 *Digestion.*—General principles with special reference to the prevention of common ailments—e.g. indigestion, constipation, &c. The relationship of physical and mental states.

7 *Metabolism and Growth General Principles of Metabolism.*—Diet, endocrines, vitamins in their relation to growth. Basal metabolism

8 *Body Temperature and Water Content.*—Their maintenance and relation to environment.

9 *Effect of Open Air and Sunlight*—Relation to vitamins.

10 *Principles of Respiration, with Special Reference to the Effect of Various Gases and Abnormal Pressures*

11 *Normal Protection of the Body against Disease.*—Skin, lymphatic tissue, digestion, excretion, immunity in their more physiological aspects. Their relation to water-supply, exposure to cold, &c.

12 *The Child.*—General care, speech, intelligence tests, evidence of deficiency

For the present no fee will be charged to D.P H. students Inquiries should be addressed to the Secretary of the School

ROYAL SANITARY INSTITUTE —A sessional meeting will be held in the Guildhall, Hull, on April 23rd and 24th, when there will be discussions on Housing, on the Public Health Functions of Bodies other than the Sanitary Authority (Dr W Allen Daley and Dr J J. Buchan), the Economic Collection of Town Refuse, and the Present Position with regard to Smoke Prevention.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION —Mr Herbert J Paterson will give a demonstration in clinical surgery at the London Temperance Hospital on Thursday, April 22nd, at 2 P.M., which will be free to members and General Course ticket-holders of the Fellowship of Medicine The Bolingbroke Hospital will hold a short course in medicine and surgery from April 19th to May 1st, the fee for which will be one guinea. Also beginning on April 19th there will be an intensive one week's course in proctology at St. Mark's Hospital and a two weeks' course in urology at St. Peter's Hospital, consisting of clinical work in the hospital daily and formal lectures. From May 3rd to 22nd a special course in medicine, surgery, and gynæcology will be held at the Royal Waterloo Hospital The Central London Throat, Nose and Ear Hospital will hold an intensive course in laryngology, rhinology, and otology from May 3rd to 22nd. This will be divided into clinical and operative parts; the parts may be taken separately if desired. The Royal Westminster Ophthalmic Hospital is holding an afternoon course from May 3rd to 22nd, with clinical work each afternoon and special demonstrations thrice weekly A comprehensive course in Venereal Diseases will be given at the London Lock Hospital from May 3rd to 29th. The clinical part of the course will be held irrespective of numbers, but the formal lectures will only be delivered if there are eight or more entrants. At the Maudsley Hospital there will be a course of lectures and demonstrations in Psychological Medicine from May 3rd to 28th; this is an abridgement of the diploma course now in progress there From May 9th to 22nd the Infants Hospital will give a course under the direction of Dr Eric Pritchard. Copies of all syllabuses, of the General Course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship at 1, Wimpole-street, London, W 1

UNIVERSITY OF LONDON.—A course of four lectures on the Integration of the Circulation will be given by Prof. R. J. S. McDowall at King's College, on Tuesdays, April 27th, May 4th, 11th, and 18th, at 4.30 P.M.; Prof. Kay Jamieson will lecture at King's College on the Nature and Functions of the Fasciæ of the Human Body on Fridays, April 30th, May 7th and 14th, at 5.30 P.M., and Prof. J. B. Collingwood will give the remaining lectures of the course on the Influence of Water on Vital Processes at University College on Mondays, April 26th, May 3rd, 10th, 17th, 24th, and 31st, at 5.30 P.M.

ROYAL MEDICAL BENEVOLENT FUND.—The date of the annual meeting will be Tuesday, April 20th, and not April 22nd as was previously announced. The meeting will be held at 11, Chandos-street, London, W., at 5 P.M.

THE LATE DR. W. K. LAW.—Dr. William Kidston Law, brother of the late Mr. Bonar Law, has died at his home at Coleraine, Co. Londonderry, at the age of 73. He was born in New Brunswick, the son of a Presbyterian minister, and studied at McGill College, Montreal, where he graduated as M.D., C.M. in 1877. He crossed the Atlantic as a young man and settled in practice at Coleraine, after taking the Scottish conjoint qualification; in 1884 he became F.R.F.P.S. Glasg. Dr. Law was well known as a breeder of Irish horses and was a large stockowner. His only son, Mr. James Law, has lived in Canada for the last 20 years.

INSTITUTE OF JOURNALISTS.—A meeting of the Circle of Scientific, Technical, and Trade Journalists will be held in the Hall of the Institute on Monday, April 19th, at 5 P.M., when Mr. J. G. Pearce (chairman of the Committee of the Association for Special Libraries and Information Bureaus) will open a discussion on a Clearing House for Information; its Value to Science and Industry, and its Relation to the Press. Those intending to be present should inform Mr. L. Gaster, 32, Victoria-street, London, S.W. 1.

PLAGUE IN INDIA.—The Bulletin of Health for the City of Bombay for February, 1926, records nine deaths from plague registered in February and two in January, the average number of deaths in February during the last ten years being 61. Calcutta was needlessly alarmed by the Weekly Bulletin of Vital Statistics issued for the week ending March 6th, 1926, which stated that "there were 20 deaths from plague against nil and nil in the two preceding weeks, the average of the past quinquennium being nil." We understand from Dr. H. M. Crake, health officer to the Calcutta Corporation, that 20 was a misprint for NO, and, in fact, that Calcutta has been absolutely free from plague since Dec. 7th, 1925.

ST. MARY'S HOSPITAL.—The Institute of Pathology and Research at St. Mary's Hospital, London, W., is holding a course of lectures on Pathological Research in its Relation to Medicine, which will be held in the Bacteriological Department on Thursday afternoons at 5 P.M., beginning on April 29th, when Sir Almroth Wright will speak on the General Outcome of Thirty-six Years' Work on Immunisation. The other lecturers will be Prof. Joseph Barcroft, Dr. Leonard Colebrook, Prof. J. Mellanby, Prof. David Wilkie, Dr. Charles S. Myers, Dr. John Freeman, and Mr. J. E. Barnard. The lectures will be open without fee to members of the medical profession and students of medicine.

THE LATE DR. J. JARVIS.—Dr. John Jarvis, who died on March 27th at the age of 66, had practised in Bath for 33 years. He studied medicine at St. Thomas's Hospital, London, and qualified as M.R.C.S. Eng., L.R.C.P. Lond., in 1885. For some time he worked at Liverpool as surgeon to the Liverpool Dispensary, and at Abingdon as surgeon to the Lying-in Charity. Dr. Jarvis first went to Bath as partner to the late Dr. John Davies and was later for a time in partnership with Dr. F. C. Fosbery. He had a large panel practice and for some 30 years was surgeon to the Western Dispensary. He was also honorary surgeon to the Church Army Labour Home. He married the sister of Dr. Fosbery and leaves one son and two daughters.

LONDON COUNTY COUNCIL: APPOINTMENT OF A FIFTH SENIOR MEDICAL OFFICER.—At a meeting of the Council held on Feb. 9th last it was decided to increase by one the number of positions of senior medical officer in the public health department, and 67 applications for the new position were received after it had been advertised. The selected officer is Dr. Aubrey Middleton Hewat, at present medical officer of health and administrative tuberculosis officer for the Metropolitan Borough of Fulham, which has released him to take up his appointment in a month's time, remaining honorary consulting medical officer to Fulham for two months after the date of his leaving office there. Dr. Hewat is an Edinburgh graduate who was medical officer of health for Nuneaton and Preston before being appointed to Fulham.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### FACTORY MEDICAL SERVICE.

To the debate on the motion for the second reading of the Labour Party Factories Bill in the House of Commons on March 26th, as yet unreported in these columns, important contributions were made by medical Members of the House.

### *The Home Office Staff.*

Dr. VERNON DAVIES said that factory legislation being concerned principally with the health of the people and the prevention of accidents, it seemed to him that one of the most important servants of the State to carry out this legislation should be the factory surgeon. He had a knowledge of medical matters, of industrial hygiene, and of accidents. He regarded the medical man, the certified surgeon, as the sheet anchor and the most important man in factory legislation because he had to decide what was best for the worker. Yet they found that the Home Office—he said this with due respect—which exercised a very great amount of control over factory legislation did so without giving the fullest attention to the medical aspect of the case. They knew that the Home Office had an extremely able medical staff of eminent men who were at the head of the profession, but they wondered sometimes whether the Home Secretary paid as much attention to the recommendations of his medical staff as he should do. It had been said that some certified surgeons had been incompetent and neglected their work. He would draw attention to the fact that the present Chief Medical Inspector, who was an eminent man, spent the greater part of his official life until the war in attending to industrial diseases and poisoning. It was only just before the war that he devoted his attention to examinations for fitness. Since that time the work of the examination of children had improved tremendously in quality and had kept on improving. Provided that the certified surgeon got proper encouragement and proper opportunities for inspections he had no fear that the factory medical service would not reach a high standard of efficiency. But in this Bill the certified surgeon was put into an absolutely new category. Instead of being made centrally from headquarters the appointment was proposed to be made locally. Instead of having one certified surgeon they might have six or seven surgeons doing factory work, either at the instance of the Home Secretary or the local authority.

The argument had been used that it was better that the factory health service should be linked up with the local medical service. He disputed that statement. They all knew that at the present time the position of a medical officer of health was largely a local appointment made with the Ministerial sanction, but it was well known that they might have two urban district councils close together where the appointments were practically made locally without great regard for efficiency, and that in one urban district council area they found a medical officer who was keen at his work, while in the next district council area they found a condition of things which was just the reverse. That was a very great objection to local appointments. On the other hand, they found that for many years the certified surgeon had been regarded as a Government officer both by the employers and the workpeople. He had gone to the factory with a certain amount of independence not subject to local influences, and the mill authorities had paid much more attention to his decisions than they would have done had he been appointed locally with the possibility of being dismissed through local intrigue and influence. They had to recognise that certain suggested improvements in factory legislation did not always meet with the approval of the employers. If they thought that a man was going to be too officious and too anxious to bring conditions up to a high standard they might be able to bring pressure to bear and perhaps in extreme cases get rid of that man. That would not be wise, and he believed that this alteration had been put into the new Bill—namely, the substitution of appointed doctors for certifying surgeons—probably because of the report of the Committee on the Medical Examination of Young Persons in Factory Employment instituted by Mr. A. Henderson. On that committee there was no medical man of actual experience in factory work. When Mr. Henderson was asked to include such a member he replied to the Association of Certifying Surgeons that the committee had already been formed after careful consideration and that such a gentleman could not be added to the committee. Only one doctor of practical experience in this work had been called before the committee to give evidence, and the doctors thought that the committee had not that full knowledge of the case for the certifying surgeons which the circumstances warranted, and that if medical men accustomed to factory work had been on the committee the report would have been different.

There was a danger that there would be no agreement between the different districts and uniformity would be impossible. The importance of this point to the workers was very great, because if they were to have an efficient factory service worked on definite lines they should have a sufficiency of medical inspectors—there were only two at present—to go all round the country to see that the certifying surgeons were all working on the same lines and to the same standard of efficiency. In that way they would get an admirable service with such wonderful effects on the workers and on industry that it would more than repay itself. He hoped that the Home Secretary in his promised Bill would give careful consideration to this question of the certifying factory surgeons and as to whether the present system was best. No doubt there were some men who did not take their work as seriously as they should, but there had always been a large number of conscientious and able certifying surgeons. It was essential for the good of industry and of the worker that this factory service should be worked from above and by Government officials under the Home Office and that standardisation throughout the country should be insisted upon. Medical men then would take an interest in what they had to do, to the benefit of all concerned.

### *The Certifying Surgeon.*

Dr. Watts said while he agreed that reform of the factory law was necessary he joined with Dr. Vernon Davies in taking exception to the attack made upon the Association of Certifying Factory Surgeons. As an ex-President of that Association and as one who for 25 years was a certifying surgeon in the industrial district of Manchester, he claimed to have a long knowledge of the work of certifying surgeons, and though they had been hampered and discouraged by the department time after time yet for a great number of years their work had been steadily improving. He would mention particularly those surgeons with districts of any size. There were roughly 1800 certifying surgeons in the country, but only 250 had a district that entailed the examination of more than 50 or 60 children per annum. With the work of the 1500 or more who had a small district he was not acquainted, but as to the work of the 250 members of the Association of Factory Surgeons he could speak with confidence of the excellent official work they had done, while in addition they had instituted many reforms and health improvements in the industrial system. For example, there was their work in connexion with the prevention of lead poisoning and carbon bi-sulphide poisoning and other industrial diseases which were now practically dying out. He had been interested for many years in a matter which was a great danger in the cotton industry—namely, the threading of shuttles by suction. A departmental committee was appointed, but nothing had been done. He had seen very definite instances of people who had contracted tuberculosis in this way. He urged that in the forthcoming Bill which the Home Secretary had promised to introduce this session they should have a unification of the factory medical service. This had already been recognised by Belgium, Holland, and Sweden. In each of those countries there was at present a complete factory medical service which was founded largely on the recommendations of the Association of Factory Surgeons in this country. He believed that they could get together in Great Britain the finest factory medical service in the world. There was an important point he wished to refer to, and that was in regard to the duties which the certifying factory surgeon had to perform in connexion with the Workmen's Compensation Acts. In the case of a workman suffering from one of the scheduled diseases, such as lead poisoning, it was first necessary for the person who was suffering to get a certificate from the certifying surgeon prior to any compensation claim. If the certifying surgeon was appointed by the local council what was going to be his position having regard to the fact that in many cases the employer might be a member of that local body? The workman, too, might be a member of it. Up to now the certifying surgeon had been an independent official, and the point was one which ought not to be lost sight of.

### *Unification of Health Service.*

Lieut.-Colonel Fremantle said that everybody would recognise that from the point of view of medical officers of health and inspectors a Bill of this kind should be passed into law as soon as possible. There were, however, very serious reasons from the point of view of those who envisaged public health as a whole why the House should not accept this Bill as it stood at present. They would not get the things set right of which they had heard in that debate unless they had continuous supervision. The certifying factory surgeon would have to certify, and was not there to watch the processes and see where medical science could help. They needed an authority at the head who was constantly there to help. At present it was left to the non-medical inspectors. They had to consider this matter a good deal more clearly than they had done at present to see in what way they could get some unity of effort between all the different conflicting medical officers and sanitary authorities and education authorities who were brought into this Bill in order that there might be a combination of effort to improve the health of the country and health in our factories. He did not suggest that the whole of the health side of the Home Office should be transferred to the Ministry of Health; that was a big question and he did not agree with it, but he did say that if the Ministry of Health was to be worthy of its name it must be in active and direct liaison with the carrying out of the Factories and Workshops Acts.

## HOUSE OF COMMONS.

### Tuesday, April 13th.

### The Economy Bill.

The House reassembled after the Easter recess on April 13th, and went into Committee on the financial resolutions connected with the Economy Bill. Mr. J. F. Hope was in the chair.

### *Health Insurance in the Services.*

Sir L. Worthington-Evans (Secretary of State for War) moved a financial resolution which in conjunction with another resolution empowered the Government to take £1,100,000 from the Navy, Army, and Air Force Insurance Fund. He said that the only effect would be to enable members of the fund to obtain benefits in addition to those provided by the Insurance Act and to call on the State to contribute one-seventh of the cost of those additional benefits. Under the existing provisions of the Insurance Act serving soldiers, sailors, and airmen paid nothing so long as they were in the forces, but the War Office made a contribution to the Insurance Fund which enabled the Service men to receive only maternity benefit while serving. A separate Army, Navy, and Air Force Insurance Fund had been set up for the benefit of the men whose health had been impaired through their service and whom no society would accept as members. Members of this fund were only entitled to standard benefits and not to any additional benefits. The alteration now proposed would give members of the fund the right to receive additional benefits equal, on the average, to the average benefits payable by the approved societies. The Government Actuary's report stated that there was a surplus, on Dec. 31st last, of £1,121,000 on the Army, Navy, and Air Force Insurance Fund, after providing for ordinary benefits. It was now proposed to transfer £1,100,000 of the surplus and to leave the balance in the fund. The Actuary advised that that amount would be sufficient to enable the fund to bear the additional benefits. This part of the Economy Bill would undoubtedly give greater benefits to the serving soldiers, sailors, and airmen than before. This money was not a surplus available for additional benefits, and if it was not transferred under the Bill it would be used to lower the Government's contribution and the men would not receive it. The Government were taking every precaution that the fund should be solvent on their Actuary's advice.

After a prolonged discussion in which Mr. R. J. Davies and Sir John Simon took part, and Mr. Lloyd George said that there was no distinction between the Government's proposals and the raiding of a bank or a public company, the resolutions were agreed to.

### *Cost of Medical Benefit.*

Clause 2 of the Economy (Miscellaneous Provisions) Bill provides that:—

> (1) Subject to the provisions of Section 83 of the principal Act there may out of the benefit funds payable under that Act be applied for the purpose of meeting the cost of medical benefit, the administration expenses of insurance committees, and any expenses incurred by the Minister in connexion with the administration of benefits, a sum at such yearly rate as may be prescribed, not exceeding 13s. per year in respect of each of the total number (calculated in the prescribed manner) of the persons who are entitled to medical benefit as being or having been members of an approved society, and there shall be paid for each year to insurance committees on account of the cost of medical benefit and their administration expenses, and to the Minister on account of expenses incurred by him in the administration of benefits, sums not exceeding in the aggregate the sum applicable as aforesaid, and not exceeding as respects the administration expenses of insurance committees the sum of sixpence, and as respects the expenses of the Minister the sum of threepence, in respect of each of the total number aforesaid: provided that if the aggregate sum paid for any year to insurance committees and the Minister under this section in respect of each of the total number aforesaid is less than the sum applicable as aforesaid in respect of each of the total number, the balance shall be carried forward and be treated as being applicable as aforesaid in any subsequent year.

(2) For the purpose of meeting any additional expenditure which may be incurred in the provision of medical benefit in Wales by reason of sparsity of population or difficulty of means of communication, provision may be made by regulations for the payment out of the National Health Insurance Fund to the Welsh National Health Insurance Fund of such sum as may be prescribed.

(3) This section in its application to Scotland shall have effect subject to the following modifications: (a) In addition to the payments to be made under Subsection (1) of this section out of the sum applicable as provided by that subsection, there may be paid thereout any expenses of the Scottish Board of Health in connexion with the provision of a medical service for insured persons in such districts of Scotland (other than the Highlands and Islands within the meaning of the Highlands and Islands (Medical Service) Grant Act, 1913) as may be determined by the Board to be necessitous, and references in the said Subsection (1) as applied to Scotland to expenses incurred by the Board shall be construed as including the expenses aforesaid; and (b) the maximum sums as respects the administration expenses of insurance committees and the expenses of the Board shall be such sums as may respectively be prescribed.

(4) This section shall come into operation on Jan. 1st, 1927.

### *An Amendment.*

Mr. R. J. DAVIES moved an amendment to omit the provision that any expenses incurred by the Minister of Health in connexion with medical benefit should fall on the approved societies. He said that the purpose of the amendment was to challenge the power of the Minister in this matter. The Minister made agreements on behalf of the insured population with general practitioners acting as panel doctors, and the Opposition were not quite satisfied that the right hon. gentleman had so far made, or would in future make, the best bargain possible with the doctors in favour of the insured persons. There was a great deal of criticism, not of the attitude of the Minister of Health, but of the actions of the medical profession in giving treatment to insured persons. For his own part, on the whole, he thought that the panel doctors had done their work admirably under the State insurance scheme. He believed, however, that the doctors had been paid handsomely for their work and that the Minister had not been at all stingy with them. The Minister should pay more attention to the opinions of the approved societies and his power to veto their proposals should be taken away. The cost of administration ought to fall on the Exchequer.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said that the provisions of Clause 2 of the Bill were designed to carry out the recommendations of the Royal Commission on National Insurance. The Commission came unanimously to the conclusion that medical benefit should be paid for out of the funds of the approved societies. The whole of the clause had received the support of the Consultative Council.

Mr. R. J. DAVIES asked whether the support of the Consultative Council in regard to Clause 2 of the Bill was not contingent on the omission of Clause 1.

Sir KINGSLEY WOOD said that that was not so. The Treasury would save, by the proposal, 3*d.* per member per year in respect of the cost of regional medical officers and of the Central Index Register.

The amendment was rejected by 208 votes to 140—Government majority 68.

### *Registration of Optical Practitioners.*

Mr. KELLY asked the Minister of Health what action he proposed to take to meet the views expressed by the recent deputation from the joint council of qualified opticians with regard to the practice of sight-testing; and what was the attitude of the Government with regard to the proposed Bill for the registration of optical practitioners.—Sir K. WOOD replied: For reasons explained to the deputation referred to by the hon. Member my right hon. friend does not propose to take any action in the matter and the Government are not prepared to grant any facilities for the passage of the Bill.

### *Accidents Due to Splintered Glass.*

Colonel DAY asked the Minister of Transport whether he was aware of the number of accidents lately to public service vehicles in which passengers had been injured by splintered glass; and would he consider the advisability of enforcing the fitting of non-splinterable glass in all passenger-carrying vehicles in the future.—Colonel W. ASHLEY replied: With regard to the first part of the hon. and gallant Member's question, I have no information. With regard to the second part, I am anxious to encourage the use of some form of unsplinterable glass on public service vehicles, but I am advised that, for reasons of cost, it would not, for the present, be practicable to make its use compulsory.

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.*

## SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, April 20th.—5.30 P.M., General Meeting of Fellows. Ballot for election to the Fellowship.

THURSDAY.—8.30 P.M., UROLOGY. Clinical and Pathological Meeting.

FRIDAY.—4.30 P.M., STUDY OF DISEASE IN CHILDREN. Clinical Meeting at the Hospital for Sick Children, Great Ormond-street, W.C. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Sir Leonard Rogers: The Climatic and Other Factors Influencing the Spread of Cholera in India.

THE MEDICO-LEGAL SOCIETY, 11, Chandos-street, W.

TUESDAY, April 20th.—8.30 P.M., Mr. C. Ainsworth Mitchell: Some Aspects of the New Regulations on Preservatives, followed by a discussion.

CHELSEA CLINICAL SOCIETY.

TUESDAY, April 20th.—8.30 P.M. (in the Board Room of St. George's Hospital), discussion on the Treatment of Late Syphilis. Speakers: *Prof. J. Eyre and Dr. C. E. Sundell.*

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, April 19th, to SATURDAY, April 24th.—Special afternoon demonstration in clinical surgery on Thursday at 2 P.M. by Mr. W. E. Tanner at the Prince of Wales's General Hospital, Tottenham. Open to all members of the Fellowship and to General Course ticket-holders.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wednesday, 5.15 P.M., Dr. Heald: Demonstration on the Diathermy Current—its Uses and Application (part of special course).—ST. MARK'S HOSPITAL, City-road, E.C. Intensive course for one week.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. Intensive course (second week). —ST. PETER'S HOSPITAL, Henrietta-street, W.C. Clinical course every afternoon and formal lectures. Further information from the Secretary of the Fellowship of Medicine.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Quay-street.

THURSDAY, April 22nd.—4.15 P.M., Dr. Langley: Diabetes in General Practice.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, April 20th.—4.15 P.M., Mr. A. H. Burgess: Acute Intestinal Obstruction.

FRIDAY, April 23rd.—4.15 P.M., Dr. F. E. Tylecote: Demonstration of Medical Cases.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES POST-GRADUATE COURSE.

THURSDAY, April 22nd.—4.30 P.M., Dr. Dyson: Eczema.

# Appointments.

BULMAN, J. R., M.B., Ch.B. Edin., has been appointed Medical Superintendent, Burgh Isolation Hospital, Hereford.

CAVE, E. H. P., M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S., D.M.R. & E. Camb., Medical Officer in Charge of X Ray Department, Royal Berkshire Hospital, Reading.

NISBET, B. R., M.B., Ch.B. Edin., Assistant Medical Officer and Assistant School Medical Officer, South Shields.

# Vacancies.

*For further information refer to the advertisement columns.*

*Belfast, Mater Infirmorum Hospital (Incorp.).*—Hon. Asst. Gynæcologist.

*Bethlem Hospital, Lambeth-road, S.E.*—Res. H.P. £25 per quarter.

*Birkenhead Education Committee.*—Asst. M.O. £600.

*Bradford Royal Infirmary.*—H.S. and H.P. Each £150.

*Bristol Royal Infirmary.*—Hon. Asst. Surg.

*Burton-on-Trent Infirmary.*—Jun. Res. H.S. £150.

*Carshalton, Surrey, Queen Mary's Hospital for Children.*—Asst. Bacteriologist. £600.

*Chester Royal Infirmary.*—Third H.S. £150.

*Coventry and Warwickshire Hospital, Coventry.*—Res. H.S.'s £150. Res. H.P. £125.

*Eastbourne, Princess Alice Memorial Hospital.*—Res. H.S. At rate of £175.

*East London Hospital for Children.*—H.P. and Cas. O. Each £125.

*Foot-and Mouth Disease Research Committee.*—Two Research Assts £500
*Gloucester County Mental Hospitals, Wotton and Barnwood.*—Jun. Asst. M.O £350
*Gordon Hospital, Vauxhall Bridge-road, S W.*—Res. H.S. £75
*Greenwich, Dreadnought Hospital.*—Med. Supt. £300.
*Leicestershire County Council*—Asst Tuberculosis M.O £600
*Liverpool, Alder Hey Children's Hospital, West Derby*—Res. Asst. M.O £200
*Liverpool, Eye and Ear Infirmary, Myrtle street.*—Hon. Aural S.
*London Hospital, E*—Asst. in Dept. of Dermatology and Syphilology
*Macclesfield General Infirmary*—Second H.S £150
*Maudsley Hospital, Denmark Hill, S.E*—Research Fellowship in Psychiatry £300
*Metropolitan Asylums Board, Colindale Hospital, Hendon, N W*—Jun. Asst. M.O £500
*Metropolitan Asylums Board, Grove Park Hospital, Lee, S.E.*—Sen. Asst. M.O £650
*Newcastle-upon Tyne, Royal Victoria Infirmary*—Surg Reg to Throat, Nose and Ear Dept and Surg Reg to Ophthalmological Dept. £100
*Nottingham, Children's Hospital.*—Res. H.S. At rate of £150
*Plymouth Borough*—Asst. Port M O &c. £750
*Preston and County of Lancaster Royal Infirmary*—Jun. H.S. £150
*Royal Free Hospital, Gray's Inn road, W C*—Gynæcologist.
*Stockton and Thornaby Hospital, Stockton-on Tees.*—Jun. H S. £200
*Surrey County Council, Kingston-on Thames.*—Asst. M.O £600
*Walthamstow, Wanstead and Leyton Hospital, Orford-road, E*—Jun H S. At rate of £100
*Winchester, Royal Hampshire County Hospital.*—H.P At rate of £150

# Births, Marriages, and Deaths.

## BIRTHS

DUNCAN—On April 6th, at Gay-street, Bath, the wife of W H. Duncan, F R.C.S., of a son.

GALBRAITH.—On April 6th, at Woodside-terrace, Glasgow, the wife of Walter Weir Galbraith, M.B., Ch.B, of a daughter

PARRY—On April 2nd, at Brynhyfryd, Pwllheli, to Dr Joan, the wife of Dr R. H Parry—a daughter

SCOTT—On April 5th at Bockum, Potter's Bar, the wife of Dr. J M. Duncan Scott, of a daughter

## MARRIAGES

ARTHUR—SADLER PHILLIPS.—On April 7th, at St. Mary's Church, Wimbledon, David Arthur, M.D., C.M., D.P H, to Mabel, widow of John Sadler Phillips, late Vicar of St. Matthew's, Ealing Common.

BICKERTON—HAWDON—On April 10th, at St Cuthbert's Church, Ormesby, John Myles Bickerton, F R.C.S. Eng, to Margaret Alsager, only daughter of Colonel and Mrs. Hawdon, of Nunthorpe, Yorkshire.

RAWSON—BROWN—On April 8th, at St. Maxentius, Bradshaw, Lancashire, Lieutenant Selwyn G. C. Rawson, R.N (retd.), to Doris Brown, M.B., Ch.B., D.P.H

WHITEHEAD—BAKER.—On April 6th, 1920, at St. James' Episcopal Church, Aberdeen, by the Rev Canon Bartlet, M.A., Rector, Gordon Whitehead, M.B, Ch.B, of Athol Villa, Dukinfield and 6, St. Ann's Passage, Manchester, to Mary Gertrude (Mollie) younger daughter of J. W Baker Esq, J P., and Mrs. Baker, of 14, Albert-street, Aberdeen.

## DEATHS

AXHAM.—On April 8th, at Kilmartin-avenue, Norbury, Frederick William Axham, L.R.C.P, aged 86

MARTIN—On April 5th, after three days' illness of pneumonia, at Oriel House, Abingdon, Paulin John Martin, M.R.C.S., L.R.C.P

RAIKES.—At Midland, Ontario, Canada, on April 7th, Lieut Colonel Richard Raikes, O B E., M.D., aged 67.

*N.B—A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages, and Deaths*

## THE LANCET: SUBSCRIPTION RATES.

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# Notes, Comments, and Abstracts.

## SOME CURIOSITIES OF CLINICAL MEDICINE.

BY C E. SHELLY, M.D CAMB, M R C.P. LOND.

### II.*

### COINCIDENT DISEASES: THEIR MUTUAL EFFECTS. INFLUENZA AND VARICELLA.

IN those exceptional instances in which two separate and distinct infectious maladies are running their course in the same individual, some modification of one or other is not infrequently to be observed. The most striking cases in which I have noticed this have occurred in the coincident examples of varicella and influenza.

In a family of five daughters, the four elder ones successively developed influenza (then prevalent in the neighbourhood) at intervals of exactly 13 days. There appeared to be nothing in their habits or mode of life to account for this special period of incubation. They had studiously abstained from attending church or any form of social gathering from the time when the first case occurred But, while I have noted cases of acute influenza which developed definite symptoms within a few hours after well-established exposure to a virulent case of the disease, I have also noted others in which the incubation period appeared to be precisely 13 days. All these four cases were of medium severity and pursued the usual course

The fifth and youngest daughter was at a boarding school near London. On the day following that on which the last of her four elder sisters developed influenza she returned home owing to her school having broken up in consequence of a widely spread epidemic of chicken pox. Thirteen days after reaching home she developed influenza. I saw her on the following morning, when my attention was called to the existence of an eruption of minute, slightly raised, macular spots, which were most numerous on the back, at the base of the neck, and especially between the shoulders; there were a few lower down on the back as far as the buttocks, and a still smaller number irregularly scattered about the face, the temples, and the scalp Within 24 hours a few more appeared on the front and sides of the chest, the flanks, and the abdomen.

Viewed through a good reading-glass the eruption was strikingly like the eruption of chicken pox in its earliest stage. It appeared on the morning of the 18th after the patient's last contact with a school fellow whose chicken pox eruption definitely developed the same evening But, in this case, the modified eruption of varicella—as I took it to be—consisted of minute spots, not more than ½ to 1 mm. in diameter, with the exception of one on the right temple, which was 2 5 mm. across when fully developed, corresponding to the popular "king pock." All the spots went through the regular successive stages of macule, papule, vesicle, and mild pustulation—as viewed through a good magnifying glass—and then speedily dried up with a resultant minute scab barely recognisable as such; with the exception of the relatively large spot on the temple, which, on the separation of its scab, left a faintly foveated scar The only discomfort of which the patient complained was of some slight and occasional irritation of the skin during the first two or three days of the eruption. Unlike her four elder sisters, this patient had not previously suffered from chicken pox.

During the later autumn of the same year several similar cases came under observation in a preparatory school of some 50 boys whose ages varied from 9 to nearly 15 years. Epidemics of both varicella and influenza were running in the neighbourhood, and both maladies invaded the school. Anything like rigid isolation of the cases was impossible. Nineteen of the boys were said to have had had chicken pox in earlier life, but the diagnosis was admittedly doubtful in the case of one of them, who developed chicken pox but escaped influenza (from which he had suffered during the previous term) The other 18 developed influenza but did not have varicella. Of the other 30 boys all but three developed influenza, not of a severe type, and 12 of them developed chicken pox also. In eight out of the 12 the two diseases were coincident, that is to say, they developed within two or three days of each other in the same individual; and in each of these eight "coincident" cases, the character and progress of the varicella eruption repeated in every essential particular the details already mentioned as having been noted in the case first described.

It would appear, therefore, that when influenza and chicken-pox occur simultaneously in the same individual, the normal eruption attending the *latter malady is liable to be remarkably* modified, in young adolescents at all events. Assuming that there may be some ancestral kinship between varicella and variola, one would like to know (1) what happens as regards the character of the eruption when variola and influenza occur coincidently; and (2) what effect (if any) would be produced in the small-pox patient by treating him with an influenza serum or vaccine at the beginning of his illness. If the result were no more than a cosmetic gain (and one might reasonably look for more than this) it would be a valuable one.

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* Part I. appeared in THE LANCET last week.

### Chronic CO Poisoning.

A young woman consulted me on account of neurasthenic symptoms from which she had been suffering through the colder periods of the previous 18 months, during which she had been employed as a typist in a factory situated in a small village amid country surroundings some miles distant. During the summer she recovered her usual good health; even in the colder weather she improved considerably during the week-ends, which were spent at her home, only a short distance from her place of work; but she began to "run down" as soon as she returned to her duties, and at the end of the week felt fit for nothing. Her hours of work were not unduly long. Her eyesight was good, and, save for a markedly anæmic condition, examinaton did not reveal any definite sign of bad health. Her family history was good.

In reply to my questions she stated that during the warmer parts of the year she did not suffer; windows were all kept open and there was no stuffiness. But as soon as a lower temperature called for artificial heat and windows and doors were kept closed the trouble began. The building was lofty, of one floor only, and was not crowded; it was constructed almost entirely of wood. It was heated by a number of iron stoves placed at intervals along one side, the chimney of each being carried up through the roof. Her desk was not far from one of these stoves, which sometimes became almost red hot. She did not appear to be in any way hysterical, and was anxious not to leave her post. She had noticed that the workers generally whose duties kept them on the opposite side of the building—away from the stoves—did not complain, although they did not seem so cheerful and talkative during the colder weather—when the stoves were burning—as at other times. Their employer was regarded as kind and considerate.

No examination of the blood was made, but the evidence seemed to point very clearly to a chronic poisoning by carbon monoxide produced by the passage of carbon dioxide gas through the red hot—or almost red hot—thin iron walls of the heating stoves. The patient was told that her symptoms were due to her propinquity to the particular kind of stove in use, and that I would write to her employer on the matter. This I did, stating my belief that, if the stoves now in use during the cold weather were replaced by a system of heating—as by hot-water piping, free from the serious risk to health involved by the method now in force—the necessary outlay would be more than repaid by the improved health and increased output of his employees. The reply to my letter was characteristic of the business thoroughness of my correspondent's American nationality. It told me that he had scrapped the present form of heating apparatus and had substituted for it hot-water pipes, flow and return, heated by a stove placed in a separate well-ventilated chamber which had no direct communication with the workroom. Three months later he wrote again to the effect that he was assured that he was receiving a handsome return on his outlay in the improved well-being and increased output of all his workpeople, to say nothing of a considerable reduction in the cost of fuel. The patient also informed me that she had lost all her previous discomfort since the new heating system had been installed. She certainly appeared to be in excellent health.

In the course of the same year I was consulted by a gentleman and his wife who occupied a large, modern, well-built house, in an open exposed situation in the country. Throughout the previous winter their general health and well-being—usually quite good—had steadily depreciated. Each morning they awoke feeling listless, depressed, and often with slight headache. These symptoms became less marked during the day, and by the evening they felt comparatively well. They were normally cheerful "open-air folk," but they now looked pallid, languid, and bereft of their usual energy. There appeared no very obvious cause for this change, and they denied having altered their usual habits and mode of life in any way—except that at the beginning of the cold weather an anthracite stove had been installed in their bedroom, and this had been kept burning ever since. They had still continued the custom of always sleeping with an open window. Further inquiry elicited the fact that the stove in question was constructed of ordinary cast-iron and was not enamelled. They were advised to replace it by a stove safeguarded by an external coating of good gas-proof enamel. This was done; the unpleasant symptoms disappeared, and the patients speedily recovered their good health. Three or four similar cases have come under my notice since, and I have heard of others. It seems probable that the mischief produced in this way may still be more common than one might have suspected.

Next in harmfulness to such carbon monoxide intoxication—although acting in quite a different way—is the too common expedient of heating a room by the use of a paraffin stove or lamp. This is often placed in the centre of the room, though occasionally on the hearth. But, unless placed actually within the chimney-throat, its effects are most pernicious, quickly robbing the air of a very large amount of oxygen, and at the same time fouling it with the products of combustion. Similarly, the condition of the air in the uppermost two or three feet of an ordinary room lighted by gas is intolerable—as will be obvious to anyone who mounts a pair of steps in order to rehang a picture under such conditions. It is seldom recognised how much of this vitiated air passes through the ordinary ceiling, which is merely a porous diaphragm, into the room above. If this be questioned, let the doubter pass a night in a bedroom so situated and compare his sensations during the night and on awaking the next morning with those which he experiences when sleeping in a bedroom situated above a room in which no gas has been burned during the evening.

### The Pressor-factor in Hyperpiesis.

The interest aroused in connexion with arterial tension—its maintenance within normal limits; the origin and causation of the various abnormalities which are so often present; and in particular, the explanation of the production of hyperpiesis *and of the several complications,* local and general, which are apt to attend its existence—has recently occupied a considerable amount of space in the medical journals and in the proceedings of medical societies. In this connexion, the details of the case described below should have, I believe, a value of their own, presenting a demonstration of what one may regard as hyperpiesis in its simplest form; the production of high arterial tension maintained for some years at approximately the same level, unattended by toxæmic or other complications, or apparent interference with health, produced and sustained by a merely functional stimulation of the adrenal bodies, due to a simple and unsuspected cause. It thus presents itself as a direct and uncomplicated example of cause and effect, affording to us, as it were, something like a standard, whereby we may recognise and disentangle—perhaps even measure—the various accretions, symptomatic and pathological, which are apt to confuse and puzzle us.

A married man of middle age, who had taken a large house in the country for the later summer months, had spent the greater part of the previous three years or more in undergoing various "cures" at numerous health resorts on the Continent and in England. During this time he had lost flesh considerably, though he was now by no means emaciated. While he could scarcely be described as a hyperchondriac, he had become very self-centred as regards his health and his diet and concerned as to the real nature of his illness, as to which he had received, according to his own account, a variety of rather conflicting diagnoses. Apart from his mentality, his condition revealed only one abnormal symptom; he slept fairly and peacefully; his appetite was small (he had continued to practise a limited dietary and his present weight had remained unaltered); he took a fair amount of light exercise with ease and enjoyment; the bowels acted well and regularly; his urine was passed in sufficient amount and was in all respects normal. There was no indication of cardiac hypertrophy. But he had an arterial tension of about 195 to 198 mm. (systolic), with a fair range. His pulse was regular and full, but not hard, and the walls of his arteries were so soft that, when the vessel was emptied of blood, it was impossible to be absolutely certain that they were detectable by the finger.

I wrote to his medical adviser in Town, asking, among other things, whether this symptom was normal to the patient, and, if so, for how long it had been noted. In reply I was told that for at least three years the blood pressure had been from 196 to often a little above 200 mm. Towards the end of the letter it was mentioned that about three years previously an X ray examination had revealed the existence of a small "latent" stone in each kidney. None of the several surgeons who had been consulted ventured to advise interference under such conditions, and, for obvious reasons, the presence of these calculi had not been made known to the patient.

Here seemed to lie the most probable explanation of the hyperpiesis. The kidneys and the adrenals have the same vascular and nervous supply, and it seemed reasonable to suppose that, while the encapsuled stones might as yet produce no definite renal symptoms, their presence as foreign bodies might, nevertheless, evoke a certain amount of continuous irritation of the compressed nerve-endings in the kidneys sufficient to bring about an increased nervous and vascular stimulation of the adrenals, and thus to initiate the hyperpiesis. One also recalled the fact that, in certain cases—e.g., an acute scarlatinal nephritis—the application of a large hot poultice to the lumbar region is followed by an appreciable softening of the previously hard pulse before any modification is noted in the amount or composition of the urine.

A large hot compress of Antiphlogistine was therefore ordered to be applied over the loins the same evening. When the patient was seen on the following afternoon the systolic blood pressure was found to be 130 mm. In other respects the patient's condition had undergone no alteration, except that he had slept rather better than usual during the previous night. During the ensuing four days the blood pressure gradually climbed up again to round about 100 mm.

The above clinical picture shows that increased activity of the adrenal bodies, if due to a simple non-toxic stimulation of their function, may continue for some three or four years at least without apparent effect on the patient's general health, and without producing any recognisable hypertrophy of the muscular walls of his arteries. It is not unlikely that if such adrenal stimulation were maintained for a prolonged period, some obvious thickening of the muscular coat would become perceptible: but this would be a natural and benign process—like the increase in the mass of his muscles during the training of an athlete. Moreover, in neither instance, should we expect any evidence of muscular degeneration so long as the exercise was continued, always provided that no toxic material were allowed to find its way into the circulation.

It is now generally admitted that, in a healthy individual, the regularly balanced action of the adrenals on the circulation is maintained by a correspondingly regulated action of the endocrine system. In the advanced—the down grade—period of life, the endocrine balance is apt to be distorted, often with a corresponding effect on the arterial tension; but even then it would appear that the arterial walls do not stiffen or degenerate if they be not subjected to some direct toxic influence brought to them by the blood they carry.

### CASCARILLA: AN UNDERVALUED DRUG.

In this country cascarilla is sometimes employed as a mild expectorant in bronchial affections. In Germany it is used—because of its tannic acid content—as an astringent in diarrhœa, and is regarded, "like many allied drugs, as a discarded remedy for fevers."[1]

Several years ago I learned that the Romany boy learns to smoke without passing through that unpleasant phase of discomfort and distress which is usually a vivid experience in the case of his Gorgio contemporary. This relief is secured to the gipsy boy by mixing with his tobacco a small amount of a certain brown powder—procured, at a price, from the wise women of his tribe. Of course, its use has to be combined with certain mystic rites and incantations, but the further consideration of these may be omitted, since they do not appear to be essential to success in the case of the heretic. The powder in question proved to be merely roughly comminuted cascarilla bark. These facts suggested that cascarilla affects not merely the pulmonary branch of the vagus nerve, but also its cardiac and gastric branches, and further observations proved this to be the case.

I will quote only one instance. In a comparatively recent epidemic of influenza, which was characterised by the sudden onset of acute gastro-intestinal symptoms, continuous painful and violent vomiting, general exhaustion, diarrhœa, irregularity and intermittence of a feeble pulse, and a very prolonged and tedious convalescence, the administration of cascarilla in aqueous infusion was attended by most satisfactory results. The mixture prescribed contained potass. citrat. or sod. bicarb., gr. xv., sp. æth. nitros. ♏ x. to ♏ xv., with equal parts of liq. ammon. acet., infus. cascarillæ and aq. menth. pip. or aq. chloroformi (according to taste) to ℥ i. Dose ʒ ss. to ℥ i. in water every two hours while awake, until the skin became decidedly moist, and then every three hours while awake. The only food allowed was water, hot and in frequent large doses, so long as vomiting continued; afterwards cold, with a small quantity of Bovril or of Oxo, for the first 24 hours. In only one of the 20 cases so treated was the vomiting so violent and exhausting that it had to be specifically checked by the administration of adrenalin (1 : 1000) ♏ vii. ss. in a wineglassful of water—a single dose of this proving sufficient. All were "quite comfortable," with normal pulse and temperature, by the end of 12 to 24 hours; at the end of the second day they expressed themselves as "quite well"—and seemed so—and gradual resumption of the ordinary diet was then begun, and they were allowed to get up after the seventh day. Convalescence in each case was speedy, uninterrupted, and complete. Other cases treated with the same mixture—except that the infus. cascarillæ was omitted—followed the prolonged and unsatisfactory course usual at the time.

In the case of patients convalescent from other debilitating conditions, who are still much "run down," without appetite, and often mentally depressed, a similar mixture, to which two or three minims of tr. nuc. vom. may be added, taken shortly before meals, often works wonders. It is, of course, important to make sure that a regular and sufficient action of the bowels is secured. It is equally serviceable when dealing with the various disabilities to which the heavy smoker is liable from time to time.

### IMMEDIATE MEDICATION.

This term is here used to signify the introduction of the medicament into the site of trouble instead of administering it by the mouth—only the beginning of a much more roundabout route. Perhaps the simplest illustration is afforded by the treatment of "lumbago" by the method recommended by Dujardin Beaumetz, so long ago that it is now almost forgotten: the subcutaneous injection of a few drops of an aqueous solution of sodium salicylate (1 in 40) into the site of pain.

I had run into a little harbour on the East Coast in order to get a leaking butt-end set right by the ship's doctor. Coming out of the hotel after dinner I spied an old friend and colleague standing under the veranda of the adjoining house. He was staying for a fortnight's golf, it seemed. The next morning, after breakfast, I found him sitting in the same place—in a chair packed with cushions—looking very unhappy. He was in the throes of a crippling lumbago; he told me it had taken him two hours to dress and golf was impossible. I asked what he was doing for his relief. "Nothing," he answered, "nothing does me any good; it must wear itself out." I suggested his injecting half a grain of sod. salicyl. dissolved in 20 minims of water into each loin. "Half a grain!" he rejoined, "why, I take it in doses of 20 and 80 grains and it has no effect." "But, by the time your 80 grains have run the gauntlet of your stomach, and have found their way into the 30 ounces of your circulation, how much of them reaches the seat of trouble?" He had not considered that. "Well," I said, "it is worth trying, and at once; by this time to-morrow it will not be very effective probably," and I went off to my boat. That same evening I found him sitting in the same chair—but without any cushions—smoking a big cigar and looking very pleased with himself. I asked after the lumbago. "Oh, that's all gone," he replied. "I did not believe a bit of what you told me, but I sent to the chemist's for a syringe and an ounce of the solution. I injected 20 drops into my right loin and in ten minutes the pain on that side had disappeared. So I injected another 20 drops into the other side, sent off for a cab, drove up to the links, and won my match." I have known many cases equally successful. So far, I have never known the treatment to fail if used within 12 hours of the commencement of the attack; in about 60 per cent. of such cases it is equally efficacious at the end of 24 hours. It never fails to give a certain amount of relief.

The following case is, in some respects, more dramatic. In the early hours of a winter morning I saw the stillborn child of a healthy primipara. Labour had been normal and not unduly prolonged. The cord was long, looped quite loosely round the child's neck. Flicking with a towel, hot affusions, artificial respiration, and tongue-traction had been persevered with for nearly two hours vainly. The child's body was stone cold, white, and its eyes were glazed and insensitive. The case looked quite hopeless. But one remembered that the infantile heart has some lacertilian qualities; and there was just a glimmer of hope, that if only one could once set the heart going, it might continue to do so. Compression of the heart by the hand would mean a mutilating operation. I was minded to try a simpler measure first. There was no ether at hand, but a really good brandy was obtainable. The child was rolled up loosely in a hot blanket, and laid on its back on the table over the edge of which its head depended. A hypodermic syringeful of brandy was then injected vertically into the centre of the cardiac dullness to the left of the sternum. Tongue-traction was then resumed. At the third pull there was a slight gasp; this was repeated, more strongly at the fifth pull; and thereafter chest compression was gently used to reinforce expiration. In five minutes the skin had become pink and the child began to wail. The mother, who had fortunately been sleeping, then awoke. The child was dressed and given to her, and took the breast readily. It never looked back, and three years later I was shown his photograph—as bonny, plump, and well-developed a youngster as one could wish to see.

## YEAR BOOK OF UNIVERSITIES OF THE EMPIRE.

THE 1926 edition of this useful year book has been edited, as before, by Mr. W. H. Dawson, and is published for the Universities Bureau of the British Empire by Messrs. G. Bell and Sons, price 7s. 6d. The year book, which was first published in 1914, has no light task to fulfil, for the calendars of the 67 British universities form in themselves a library of imposing dimensions, some 50,000 pages, and are hardly accessible in their entirety anywhere than at the Bureau. The year book makes the attempt to extract from each of these bulky volumes such information as is likely to interest members of other universities and colleges, Government departments, school-masters, and the public generally. Medicine is largely represented in the year book, the section, for instance, which deals with the medical schools of the University of London (pp. 154 to 167) giving useful general information regarding the large teaching schools and the other institutions at which medical instruction is available in London. Appendix 26—which can be obtained in pamphlet form from the Bureau free of charge—supplies a list of professional schools, specialist studies and post-graduation courses, indicating to what extent each university undertakes work which is not common to all. Appendix 25 contains brief notes of the principal universities in the United States, those on foreign universities given in previous editions having been discontinued in view of the publication by the National Union of Scottish Students of a new Handbook on Foreign Study. The year book contains an index of names and an index of colleges and institutes, as well as a general index. It is conspicuous throughout for its accuracy and ease of reference. The address of the Universities Bureau is No. 50, Russell-square, London, W.C. 1.

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[1] Prof. E. Poulsson: "Text-book of Pharmacology and Therapeutics."

## INDUSTRIAL WELFARE WORK.

A RECENT publication by the firm of Reckitt and Sons, Ltd., describing the welfare work carried out in their factories and workshops, gives a good idea of how some of the general principles of industrial welfare may be applied to a specific industry. There can be few firms which have such a long and successful history of this kind of effort. The first lady welfare worker was appointed in 1906, and in the following year a works council was instituted. This was a far-sighted and wise move, and the development of welfare work on a coöperative and democratic basis has resulted in a fine organisation. This is mostly under the management of the employees themselves with the technical assistance of the welfare workers who now play an integral part in the firm's activities. In Hull the firm employs a full-time doctor, whose duty it is to look after the general health of the workers and to examine applicants for employment, and a full-time dentist examines the teeth of all applicants and gives the necessary dental treatment. A nurse is on duty during factory hours and a visitor goes to see any employees who are confined to their homes. The various clubs, educational institutions, and sports organisations also occupy a large part of the welfare workers' activities.

## COUNTER-ATTRACTIONS FOR THE SAILOR.

A COMMITTEE of the United States Navy has been considering the prevention of venereal disease; the committee was exceptional, for there served on it no officer above the rank of commander—a committee, therefore, of junior officers only, and on that account, if for no other, memorable. Venereal diseases, they say, cause much loss of service, but how much is not accurately known. To make registration as complete as possible they recommend that no man shall lose pay or leave because of these diseases. As to their origin, it is observed that they are always contracted outside the service, and that the self-indulgence that makes them possible is learned not in the Navy but in childhood. Men naturally seek the society of women, and of good women if they are attainable. But it is less easy to become acquainted with these good women, so the committee recommends (*U.S. Naval Medical Bulletin*, December, 1925) that the Admiralty shall employ "at whatever salary necessary" a woman of agreeable and forceful personality, a trained social worker, to organise a corps of clever women willing to initiate social functions for the sailors in the ports and so to keep them out of mischief. If the Bureau of Navigation accepts the recommendation it will be interesting to see the results.

## THE VENTILATION OF KITCHENS.

THE relation of the various methods of producing heat in dwelling-houses to health and disease is a subject on which laymen and, indeed, doctors often hold strong, if not prejudiced, views. The argument set forth by Dr. Vernor Sinclair in a small treatise[1] recently published is that carbonic acid, carbon monoxide, sulphurous acid, and ammonia arising from gas cooking stoves and closed combustion stoves are responsible for a number of illnesses including nasal catarrh, acid dyspepsia, rheumatoid arthritis, asthmatical conditions, diabetes, cancer, and various nervous states—e.g., neurasthenia. The evidence put forward in support of this argument is scanty and by no means convincing. There is at present no evidence, either statistical or experimental, that such gases, under ordinary conditions, ever accumulate in sufficient quantities to cause poisoning. Moreover, Dr. Sinclair admits that men are more frequently affected than women, although women spend far more of their time in proximity to such cookers and heaters. He gets over this difficulty by stating that man is less resistant to disease than women. In a foreword he states that plants in conservatories and greenhouses would die if gas and coke combustion products were allowed to enter these buildings; therefore, the heating apparatus is placed outside, and he argues that the same should hold for rooms for man. We know of some greenhouses where the heating apparatus is inside. It is possible to have sufficient air-flow to carry away combustion products if the heaters are inside hothouses, but the expense is greater. In ordinary rooms designed for human occupation, including kitchens, there is sufficient ventilation to carry away the products of combustion, so that there would appear to be no need to find other situations than those at present in use for cookers and heaters if the ventilation is efficiently controlled.

## "OLD AGE MUST COME . . . ."

*To the Editor of* THE LANCET.

SIR,—I have read with much interest the note under this caption in your issue of Jan. 30th (p. 268) in which you state that "the idea of an extra ten years of enforced idleness after a busy and interesting life does not appeal to everyone," and imply that there may be some good fortune in being carried off by pneumonia in early old age.

The question you raise is an exceedingly important one in its bearing upon activities in public health and personal hygiene. The apathy or cynicism, if you please, of many people towards a programme for increasing the vitality and longevity of the race is a serious hindrance to the adoption of such measures as the periodic health examination and the acceptance of the counsel based upon the results of such an examination. Hence I am prompted to ask space for a presentation of the true thesis that underlies the movement for the extension of human life.

When the statement is made that ten years may be added to human life, it is natural for many people to picture individuals ranging from 65 to 75 years of age having ten years added to an existence that, on the average, is none too comfortable or satisfying. This, however, is not a true picture of the situation when ten years have been added to the average lifetime. In the United States about a dozen years have been added to the average lifetime in the past 37 years, but this certainly has not been accomplished by prolonging the lives of people over 60. It has been accomplished chiefly by a reduction in the death-rate under age 5. There has been little extension of life beyond the age of 50.

It is true that the present objective of the life extension campaign in this country is toward a reduction of the death-rate in later life, especially through the medium of periodic health examinations. The combined efforts of health workers in the various fields may be counted upon to reduce the death-rate at every age-period of life. And, most important, the reduction in the death-rate beyond age 50 and the carrying forward of the ultimate span of life to a much later period will be accomplished only through improving the vitality during the so-called active periods of life, and, in fact, materially prolonging that active period. It may be possible that the actual period of what we now picture as old age will be shortened.

In my judgment, the most pitiable aspect of the present situation of civilised man is the comparatively brief period of youth—what I have termed the health span—which actually persists, on the average, not more than ten years. This period of exuberant youth when the individual is in possession of the full ample reserves of power should be greatly extended. The work span—that is the period during which working men are regarded as so-called good risks—does not extend much beyond 45. The object of the life extension movement is to extend this period beyond 60. These are the constructive, attractive, and actual ends in view rather than adding a few feeble years to an already feeble existence.

As I have elsewhere expressed it, there is no purpose in the life extension movement to merely hang on to the coat-tails of Father Time, but rather to start as early in life as possible to equip the individual for a long and successful period of living, interpreting success as satisfaction in living in the highest sense of the term.

I may say, incidentally, that in the course of this work I meet a very large number of elderly people who are very eager to have their lives extended. The complacency with which men who have not yet felt the touch of old age state that they will be very glad to have their period of old age shortened, is rather rarely found among those who have actually reached that critical time. The will to live, or rather the desire to live, is a very widespread, in fact universal, characteristic of old age.

I am, Sir, yours faithfully,

EUGENE L. FISK, M.D.,
Medical Director, Life Extension Institute,
Inc., New York.

March 28th, 1926.

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[1] Combustion and Atmosphere and Their Relation to Disease. By W. Vernor Sinclair, L.R.C.P., L.R.C.S. Edin. London: John Bale, Sons and Danielsson, Ltd. 1925. Pp. 47. 2s.

# Hunterian Lecture

ON

# NEOPLASMS OF THE TESTICLE.*

*Delivered before the Royal College of Surgeons of England on Feb. 12th, 1926,*

By H. W. B. CAIRNS, M.B. Adel., F.R.C.S. Eng.,
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*ASSISTANT SURGEON TO THE LONDON HOSPITAL.*

THE great majority of testicular tumours fall into two main groups: (1) *Mixed tumours.* This term is here used in its widest sense to denote tumours composed of several types of tissue, all of them truly neoplastic. (2) *Spheroidal-celled tumours*, which, according to the interpretation of individual workers, have been variously described as alveolar sarcoma, carcinoma, séminome, spermatocytoma. Having studied at the London Hospital some 95 tumours of the testicle and its adnexa, I have found that 93 per cent. of the primary tumours of the testicle itself belong to one or other of the above groups. The two groups are approximately equal in their frequency.

Thanks largely to the classic paper of Wilms[1] in 1899 it is now generally realised that the mixed tumours are teratomata. Numerous views have been advanced as to the nature of the spheroidal-celled tumour, but it is only necessary here to mention the view of Ewing,[2] who claimed in 1911 that spheroidal-celled tumours were teratomatous. More recent workers have declared against this view, but, from the evidence provided by this series of cases, I believe that Ewing was right in his main contention, and that these common tumours are one and all teratomatous.

## General Consideration of Teratomata.

At the outset it is very necessary that I should place before you the views at present held as to the nature and origin of teratomata. I need scarcely point out that there is no measure of finality in these views, for the simple reason that the subject in its essence is intimately connected with, and dependent upon, some of the unsolved though fundamental problems of human biology and embryology. All that we seek is the best explanation of the facts about teratomata so far as they are known.

It is generally agreed that a mixed tumour which contains derivatives of all three germinal layers (epiblast, mesoblast, and hypoblast) is a teratoma. If the tissues of the tumour are of the fully differentiated adult type, and if their arrangement is more or less orderly and imitative of structures in the adult body, then the teratoma is said to be typical or adult. If, on the other hand, the tissues are in a state of incomplete differentiation and are wanting in orderly arrangement, then the teratoma is atypical or embryonal. In reality, there is no sharp morphological line of division between these two groups, yet the terms have a definite value clinically, and they also make us recognise a remarkable quality exhibited to a greater or lesser degree by every teratoma—the quality of differentiation.

The teratoma must be conceived to represent a separate individual, "an autonomous growth, the product of the continued development within one individual of another individual of the same species" (Adami[3]). There are many observations, both macroscopic and microscopic, which support this conception, but the actual proof rests upon the discovery of chorionic elements in teratomata. In 1902 Schlagenhaufer[4] demonstrated areas of chorion carcinoma in teratomata of the testicle, and his observation has since been amply confirmed. Chorionic elements are undeniably fœtal, and their presence in teratomata, therefore, proves conclusively that such tumours are to be regarded as separate individuals. The stimulation of the breasts to secretory activity by these tumours, a point referred to below, is further evidence of their fœtal nature.

As Adami has pointed out, teratomata are best explained as arising from totipotent cells—that is to say, cells which possess the power of giving rise to every order of cell in the body. First and foremost among such cells is the fertilised ovum; but there are also other totipotent cells, chief of which are the germ cells, and the first products of somatic development, the primordial blastomeres. As somatic development proceeds the cells of the body become more and more differentiated, and at the same time more and more restricted in their potentialities. Whereas the primordial blastomeres are totipotent and are capable of giving rise to an individual, the cells of the three-layered embryo are at first pluripotent but ultimately become unipotent; when the fœtus is fully differentiated the cells of any organ or tissue only give rise to like cells.

If we accept this view it is no longer possible to regard teratomata as arising from the paradidymis, or, as some recent writers[5] have it, "possibly from some vestigial mesonephric structure." The mesonephros is mesoblastic, and cannot give rise to the epiblastic or hypoblastic components of a teratoma. There is at present no evidence in favour of the view that metaplasia can occur between tissues of different germinal layers.

In the testicle, as in other organs in which teratomata of tridermal (triphyllic) structure occur, there are also found mixed tumours in which it is only possible to demonstrate derivatives of two germinal layers (diphyllic tumours). These are best regarded as being truly teratomatous and arising from totipotent cells. For, apart from the fact that absence of derivatives of one germinal layer may be merely apparent and due to incomplete microscopic examination, there is no reason to suppose that a totipotent cell must always exert its full potentiality. For similar reasons tumours of the testicle which contain multiple derivatives of one germinal layer (monophyllic mixed tumours) may be regarded as teratomatous. Here, however, my experience leads me to the conclusion that a thorough examination of mixed tumours of the testicle never fails to reveal evidence of structures derived from at least two of the germinal layers.

## Teratoma Testis.

### 1. *Typical Teratoma (Testicular "Dermoid").*

*Structure.*—This tumour bears a very close resemblance to the more common "dermoid cyst" of the ovary. It consists usually of a large cyst, lined by skin and filled with hairs and sebaceous material. When the main contents of the cyst are cleared away there is found on some part of the cyst wall a protuberance (embryonal rudiment, or Zotte), which contains many diverse structures—brain tissue, teeth, bone, cavities resembling œsophagus and trachea, and so forth. In testicular "dermoids" the embryonal rudiment may sometimes be very large and may almost completely fill the cavity of the main cyst, thus giving to the tumour a more solid appearance. Occasionally the main cyst is lined by nervous tissue, as in a beautiful specimen taken from a cryptorchid colt, and kindly placed at my disposal by Mr. Frederick Hobday. A thorough histological examination of these tumours never fails to reveal evidence of their triphyllic structure.

*Habits.*—The testicular "dermoid" is common in the horse, and is in that animal frequently associated with cryptorchidism (Hobday[6]). In man it is a rare tumour, and I have only been able to find records of 47 undoubted cases. From an analysis of t
it is possible to confirm the contention of
that the tumour is congenital, for of the
data were available 92 per cent. were
or shortly after birth, and in 84 per c

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* The work on which this lecture is based will be published elsewhere at a later date.

appeared within the first year of life. In only 5 out of 44 cases was the tumour first observed in adult life, and in one of these (Lexer [8]) the testicle lay within the abdominal cavity.

The tumour runs a remarkably benign course. It may exist for as long as 40 years before the patient seeks relief. I can find in the literature no authentic record of spread by metastases, nor can I find any histological study which provides undoubted evidence of malignancy of the testicular "dermoids." Similar tumours in other parts of the body occasionally become malignant, so it is not impossible that testicular "dermoids" may do the same. For the present, however, we may conclude that the tumour is essentially benign.

*Site of Origin.*—The occasional appearance of an almost normal testicle at one or other margin of the tumour suggests the idea, first advanced by Verneuil, that the "dermoid" has an extra-testicular origin. There are, however, now on record a number of cases in which the "dermoid" is entirely surrounded by testicular tissue, and the published cases on critical examination furnish no proof that the growth arises outside the testicle. Verneuil conceived the testicular "dermoid" to be the inclusion of a parasitic fœtus. This we now know to be incorrect, for "dermoids" arise in undescended testicles, where, according to embryologists, fœtal inclusion can never occur.

### 2. *Atypical Teratoma (Mixed Tumour).*

The atypical teratomata occur with much greater frequency than do those of the preceding group, for they comprise approximately half of all the primary tumours of the testicle. In design they follow the same general lines as the typical teratomata, but they differ remarkably from the latter in their extreme malignancy. They are found most commonly in adult life between the ages of 20 and 40 years.

*Structure.*—These tumours are composed of many different tissues in various stages of differentiation. They present in complex array tissues similar to those found in the normal fœtus—cartilage, involuntary muscle, jelly tissue (the so-called "myxomatous" tissue), tubules or cysts lined with columnar epithelium usually of a mucous type, stratified squamous epithelium, and so forth. But they contain also other tissues, so little differentiated that it is impossible to determine what part of the organism or which germinal layer they represent. These "undifferentiated" tissues usually predominate.

The tissues found vary widely in individual tumours, and the naked-eye appearances are correspondingly variable. The most usual type is a solid tumour composed of soft, white, necrotic and hæmorrhagic tissue with here and there a few cysts, or tiny lobules of cartilage. In such tumours a most thorough examination is necessary to obtain evidence of a triphyllic or even a diphyllic structure. A more unusual type of tumour is one which, composed largely of differentiated tissues, presents to the naked eye a "fibro-cystic" appearance, or a preponderance of cartilage. The one characteristic macroscopic feature of atypical teratomata is that the living portions of the tumour are not perfectly uniform in appearance.

The quality of differentiation is remarkably well shown by these tumours. Their tissues differentiate in the same way as do those of the normal fœtus. All transitions can be observed between the earliest cartilage, appearing in the centre of a group of spindle cells, and cartilage which is undergoing ossification. Primitive voluntary muscle-fibres are seen to assume transverse striation of their cytoplasm. Tubules lined with mucous goblet cells become surrounded by first a circular, then an outer, longitudinal coat of involuntary muscle; they are forming by their differentiation a perfect imitation of primitive gut. Megaloblasts are seen losing their nuclei, becoming thus transformed into erythrocytes. . . .

The observation of these differentiations provides a most fascinating but time-consuming histological exercise. The changes can usually be followed only in those structures which, like cartilage, present a distinctive and easily-recognised histological picture. But anyone thoroughly familiar with the histology of the early embryo could doubtless trace similar changes in other structures of the tumour, particularly in the structures of glandular type.

*Malignancy.*—A certain hesitancy is evident in many of the writings on this question. Earlier workers were inclined to regard the atypical teratomata as benign, but liable to undergo malignant change. Concerned mainly with establishing the fact that fibro-cystic and certain of the solid tumours of the testicle were actually teratomata, they neglected to follow up their cases. They were influenced in their views by the behaviour of the typical teratomata or "dermoids," already shown by Verneuil to be benign, and doubtless also by the observation that atypical teratomata may exhibit remarkable variation in their rate of growth. But this peculiarity is shown also by the metastases of atypical teratoma. Both primary and secondary tumours may remain apparently stationary for years without affecting the health of the host. Then suddenly, perhaps after an injury, they take on rapid growth, and by further extension soon destroy their host. I was able to observe a remarkable case in which a metastatic lump in the groin, appearing soon after removal of the primary tumour, remained almost stationary for over two and a half years, and only began to grow rapidly after it had been examined by a large class of students. Post hoc or propter hoc? I do not know. But whatever its cause this rapid growth of the lump was associated with further extension of the disease, and the man was dead within six months.

On following the life-history of a number of cases it is evident that the atypical teratomata of the testis are among the most malignant tumours known to man.

The after-history of 34 of the 35 cases of this series, which was begun in 1908, has been traced to the end of 1925; 22 have died of metastases, in 12 cases within six months of the onset of symptoms. On histological examination the tumour is seen to spread by invasion of the surrounding testicular tissue, the epididymis, spermatic vessels, tunica vaginalis, and even the scrotum. With histological evidence of this nature it has been possible to show that 80 per cent. of the cases of this series were malignant.

The metastases usually have a mixed structure. In six of the ten cases of this series in which metastases were examined, derivatives of two germinal layers were found, and in one other case they contained derivatives of all three layers. While they are composed chiefly of undifferentiated tissue, the metastases occasionally show structures of a perfectly benign appearance; for example, tubules lined with a single regular row of mucous goblet cells and surrounded by a layer of involuntary muscle. It sometimes happens that the metastases consist almost entirely of a differentiated tissue of benign appearance, as in Paget's famous case,[9] where the lungs, inferior vena cava, and spermatic vessels were occupied by cartilage. In other cases the differentiation of certain elements may be more advanced in the metastases than in the primary tumour. Occasionally the metastases present tissues not found in the primary tumour.

It is only by regarding the atypical teratomata as inherently malignant that these varying appearances can be explained. The primary tumour contains cells of differing potentialities. Any or all of these cells can spread to distant parts and there produce metastases. And in spreading they do not lose their power of differentiating. They are still capable of producing in the metastases perfect imitations of parts of the fœtus, structures of histologically benign appearance. It is, therefore, clear that the teratoma is not malignant through having undergone a "sarcomatous" or "carcinomatous degeneration," as some writers would have it. The tumour is inherently malignant. Both primary and secondary tumours are teratomatous.

### 3. *Chorion Carcinoma.*

Chorion carcinoma is found within the testicle either alone or in association with mixed or other teratomatous tumours of the testicle. *Its structure is identical* with that found in chorion carcinoma in women. It is extremely malignant. The primary tumour is occasionally small, and thus it happens that the patient frequently presents himself for symptoms produced by the metastases.

In a case, the details and materials of which were kindly placed at my disposal by Mr. Foster, of Reading, a man of 23 came complaining of a swelling of the left side of the face and a discharge of blood from the mouth. The left superior maxilla, which contained growth, was excised, and histological examination showed chorion carcinoma. Further examination then showed that the left testicle was the size *of a small tangerine orange, hard and devoid of testicular* sensation. The man died of extensive metastases five weeks after the appearance of the swelling in the face. The testicle contained a chorion carcinoma.

### 4. *Spheroidal-celled Tumour (Séminome).*

*Structure.*—This tumour is composed of a perfectly *homogeneous* white or greyish-white tissue, which is divided into lobules by fine and coarse fibrous strands. Areas of necrosis are almost constant, and small points of hæmorrhage frequent. The tumour is usually large, but a small scirrhous type also occurs, in which the fibrous septa are broad and the lobules of growth correspondingly diminished in size.

Microscopic examination reveals no mixture of tissues, but a tumour entirely composed of large spheroidal cells of striking appearance. Perhaps the most characteristic features of these cells are the prominence of their nucleoli, the powdered appearance of the nucleus, and the abundance and vacuolation of their cytoplasm. Multinucleate forms occur. The cells are arranged in large solid acini and trabeculæ. Within the acini, as Prof. Turnbull has long pointed out in his lectures, the formation of tubules is not infrequently seen. The tumour is extensively infiltrated with small round cells, chiefly small lymphocytes, but also plasma cells and eosinophile leucocytes.

*Habits.*—The spheroidal-celled tumour is undoubtedly malignant. Metastases were found in 21 of the 41 cases of this series. In the remaining 20 cases evidence of spread by invasion was obtained in all but three cases. The tumour is essentially one of adult life, and on the whole it tends to appear at a later period than does the atypical teratoma.

### 5. *"Combined" Types of Teratoma Testis.*

Recognition of the teratomatous nature of the spheroidal-celled tumour of the testis was due *primarily to the discovery of tumours which, to the* naked eye, were partly spheroidal-celled tumours and partly atypical teratomata. Observations of this nature were first made by Lecène,[10] and have since been confirmed by Ewing,[3] Jeanbrau and Massabuau,[11] Ferrero,[12] and others. In the London Hospital series of 77 cases there were six tumours in which the association of spheroidal-celled tumour with atypical teratoma could be recognised macroscopically. And in one of these there was, in addition, a large area of chorion carcinoma.

MR. MILNE'S *Case.*—This was a man aged 28, who died of metastases three months after swelling of the testicle was first observed. The testicle measured 9 × 7 × 5·5 cm. It was chiefly occupied by chorion carcinoma, but contained also hyaline cartilage, stratified squamous epithelium, and tubules lined with a single regular layer of columnar epithelium. In addition, on the posterior aspect of the upper pole there was an almond-shaped area (3·5 × 1·1 cm.) of homogeneous white tissue, which on microscopic examination proved to be typical spheroidal-celled tissue.

But the *microscopic evidence* is much more abundant. Atypical teratomata almost invariably contain among their undifferentiated tissues large irregular tubules and ill-defined solid acini, composed of cells which are identical in their structure with the cells of the spheroidal-celled tumour. Such cells were found in 32 of the 35 atypical teratomata of the present series. This point has been noted by Ewing.

## THE ORIGIN OF TERATOMA TESTIS AND ALLIED TUMOURS.

As far as I am aware no direct observation has *yet been made upon the origin of teratomata*, either within the testis or elsewhere. The teratomata of the testicle are best explained as arising from totipotent cells. Of these there exist many in the normal testicle, and it is therefore not necessary to suppose, nor is it even probable, that the tumours arise from other totipotent cells, such as "dislocated" primordial blastomeres or primordial ova persisting within the testicle.

Work on the origin of the spheroidal-celled tumours throws suggestive light on the genesis of the whole group of teratomatous tumours. From the time of *Langhans*[13] *many observers of note have maintained* that they can trace the origin of the spheroidal-celled tumour from the seminiferous tubules. In support of this claim Dew[14] has recently brought forward some important observations. Ewing, recognising that the spheroidal-celled tumour is undoubtedly teratomatous, has gone yet further and has interpreted the tumour as representing the overgrowth of one element of a pre-existing teratoma. He regards the spheroidal-celled tumour as a teratogenous blastoma and rejects the claim that it arises from the seminiferous tubules.

There have thus sprung up *two apparently irreconcilable* schools of thought: the one holds that the spheroidal celled tumour arises in the seminiferous tubules, the other claims that the tumour arises in a teratoma. My own observations show that *the* spheroidal-celled tumour is teratomatous in nature, but they do not provide evidence from which we may conclude that the tumour actually *arises* within a teratoma. In atypical teratomata transitions from spheroidal cells to mucous goblet cells and to squamous epithelium are clearly demonstrated; transition to mesoblastic tissue is not definite. The relations of the cells thus suggest that they may be differentiated to the extent that they are hypoblastic, but it is only possible to say that they are poorly differentiated cells, and that no less differentiated cell can be recognised in teratomata. They may, indeed, be the primary, totipotent cells of teratomata, and I have found some evidence that they do arise within seminiferous tubules.

Further work may, therefore, reconcile the two conflicting views, showing that the spheroidal cell arises within seminiferous tubules and that it is a totipotent teratomatous cell. Such an explanation as this would be in perfect accord with our knowledge of the seminiferous tubules. For, as Prof. Turnbull has pointed out to me, spermatogonia are totipotent cells which possess the power of dividing into cells of similar potentiality. A tumour arising, for instance, from spermatogonia would be *a multiplication of cells* which apparently have all the potentiality of totipotent cells; any or all of them could form a teratoma. This view would explain well the varieties of tumour which are found in the teratoma group, and would provide for their common origin. (1) Tumours composed entirely of undifferentiated (totipotent) cells = spheroidal-celled tumours. (2) Tumours composed of tissues in various stages of differentiation = teratomata. (3) Tumours composed of a mixture of undifferentiated (totipotent) cells and differentiating tissues = the "combined" tumours.

## INTERNAL SECRETION AND TERATOMA TESTIS.

It is a remarkable fact that true hypertrophy of the breasts may follow the development of teratoma *testis or of its metastases*. The phenomenon was observed in two cases of this series. The enlargement in both cases coincided with the development of the metastases. In one case, under the care of Sir Hugh Rigby, the breasts were examined at necropsy. They measured 8 cm. in diameter and up to 1·7 cm. in depth, and they contained very numerous dilated ducts and ductules, which showed proliferation and desquamation of their lining epithelium. In another case of this series the patient gave a history of transitory swelling of the breasts and axillary glands, two months before the swelling of the testicle was first observed. Three cases of this type are reported in the literature by Garbarini,[15] Cooke,[16] and Warthin,[17] and my friend, Dr. Archibald Malloch, of Montreal, informs me that he has had one case. In Garbarini's case the breasts subsided after removal of the affected testicle. In the cases of Cooke and Warthin and Malloch the testicle contained chorion carcinoma.

These observations provide indirect evidence in support of Starling's original contention[18] that the normal fœtus produces a hormone which acts *directly* upon the breasts. Sacchi[19] has reported an interesting case in which a tumour of the testicle was associated with male sexual precocity.

### ÆTIOLOGY OF TERATOMA TESTIS.

*Relation to Injury.*—It is unlikely that an injury of the testicle can by itself give rise to a tumour. For, whereas tumours of the testicle are uncommon, almost every active male receives at some time or other in his life a blow on the testicle. Yet there is a definite association between injury and testicular tumour. In 14 of the 79 cases of this series in which the clinical history was recorded the testicular enlargement followed, or was first observed, shortly after a local injury. Other observers have obtained a history of injury in as many as 50 per cent. of their cases.

Writing in the eighteenth century Percival Pott[20] recognises that cancer follows injury of the testicle; he continues, "but (to say) that previous to such accident, there was no cancerous disposition or malignity in the habit, is an inference that cannot be admitted." The following remarkable case suggests that the true relationship between injury and tumour of the testicle is expressed in this cautious proviso of Pott's.

MR. WALTON'S *Case.*—S. B., aged 40, had been wounded by a bomb in February, 1918. From a recent examination of the scars it appears that a projectile had seared a transverse groove across the front of the upper part of the left thigh, and had then passed through the lower part of the scrotum and the hamstrings of the right thigh. Four months after being wounded the patient noticed that the left testicle was enlarged. From that time it gradually increased in size until his admission to hospital in July, 1919.

The left testicle was enlarged and hard. In the right side of the scrotum there was a small isolated nodule about 1 inch in diameter. This nodule lay in the subcutaneous tissue alongside of one of the scars. It was not attached to the right testicle, which was normal. At operation Mr. Walton removed the left testicle and spermatic cord, and at the same time excised the nodule and overlying skin from the right scrotum. The left testicle was entirely occupied by a typical spheroidal-celled tumour, save at the lower pole, where there was a small cyst (3·5 cm. diameter) immediately beneath the tunica albuginea. The nodule from the right scrotum had a microscopic structure identical with that of the primary tumour.

When last seen, over six years after operation, the patient was perfectly well and showed no signs of further metastases.

Bearing in mind that the scrotal metastasis was evidently solitary, and that it occurred in a most unusual position, in the track of a projectile, I suggest that the most adequate explanation of this case is to suppose that the testicular tumour was already present before the patient was wounded, and that the metastasis was produced by the carriage or spread of tumour cells along the path of the projectile. There is, therefore, reason to suspect that injury of the testicle does not give rise to the neoplastic process; its part is rather to stimulate to more rapid growth a pre-existing but hitherto unobserved tumour.

*Relation to Undescended Testis.*—While in the horse teratoma testis is commonly associated with cryptorchidism, in man there is no such close relationship. Mr. Russell Howard,[21] from a wide experience, concludes that there is no great difference between the relative frequency of malignant disease in the imperfectly descended testis and in the normal organ. In only five of the 77 human cases of this series was the affected testicle not in the scrotum. In three cases it was in the iliac fossa, and in two others it was lying on the external oblique. In one of these two torsion of the spermatic cord had occurred; the tumour (2 cm. in diameter) was only discovered after removal of the testicle. There were two other cases in this series in which a scrotal testicle contained a tumour, while the other and undescended testicle was unaffected.

### THE EXTENSION OF TERATOMA TESTIS.

With the single exception of the typical teratoma or "dermoid" all varieties of teratoma testis have been shown to be extremely malignant. There are minor variations in the intensity of the malignancy: chorion carcinoma destroys the host with astonishing speed, and the atypical teratoma is more rapidly fatal than is the spheroidal-celled tumour. It is, perhaps, for this reason that invasion of the epididymis is most frequently seen in the spheroidal-celled tumour.

In all varieties of teratoma testis, metastatic extension occurs by way of the veins or lymphatics of the spermatic cord, and results usually in the development of a secondary tumour in the lumbar glands. In 29 out of 33 cases in which data were available the first metastases to appear were situated either in the lumbar glands or along the course of the spermatic vessels. We may conclude, therefore, that the operation designed for the removal of the spermatic vessels and lumbar glands does at least rest on a sound basis of morbid anatomy.

In the lumbar glands the metastases usually grow to an enormous size and eventually form a huge confluent mass, through the centre of which pass the abdominal aorta and inferior vena cava. The mass is palpable above and not below the umbilicus as a deeply-placed ill-defined swelling. Its clinical importance is not confined to the fact that it provides evidence of the inoperability of any particular case, for by its invasion of surrounding structures it produces diverse clinical pictures, the significance of which may elude the observer if the primary tumour has escaped notice. The lumbar mass may invade the lumbar vertebræ and produce paraplegia, as in a case quoted by Curling.[22] Both ureters may be obstructed with resulting hydronephrosis and uræmia. Destruction of the adrenal bodies doubtless accounts for the extreme wasting which occurs in many cases. But the most common clinical manifestation of the lumbar metastases is, undoubtedly, intestinal obstruction, due to the formation of adhesions between small intestine and the anterior surface of the growth. Invasion of the lumen of the inferior vena cava is also a frequent occurrence; it may be followed by thrombosis of the vein and great œdema of the legs, or by a pulmonary embolism. Perhaps the most remarkable case in this series, from the clinical point of view, was one in which a neoplastic embolus passed from the spermatic vessels to the heart, thence by way of a patent foramen ovale to the right middle cerebral artery. This patient was at work when he suddenly had a "stroke." He died a few days later.

### THE OTHER TUMOURS OF THE TESTICLE.

Now that so many tumours are recognised to belong to the teratoma group, the question arises whether there really are any other primary tumours of the testicle. There occur in this series three cases which must from their structure be regarded as fibromyosarcoma, round and spindle-celled sarcoma, and angeio-endothelioma respectively. Such tumours could certainly arise from the stroma of the testicle, but it is difficult to be sure that they are not teratomata, for in each case the microscopic examination was limited to a small portion of the tumour.

*Lymphosarcoma.*—There is, however, one distinct and homogeneous tumour which, so far at least, has not been proved to be teratomatous—that is the lymphosarcoma. I have encountered three such cases. The tumour is entirely composed of small cells which measure 5 to 9 microns in diameter. The cytoplasm is relatively scanty, the nucleus notched or lobed, and deeply stained. The cells infiltrate the stroma of the testicle without destroying the seminiferous tubules. They themselves form no connective tissue. A very characteristic picture is thus produced. Microscopically the seminiferous tubules appear as islands amid a sea of tumour cells, and on naked-eye examination the tumour, which is of rubbery consistence, still faintly reveals the pattern of the normal testicle. It has, too, something of the colour of the normal testicle. The tumour is extremely malignant; metastases rapidly appear in many tissues and organs, particularly in lymphatic glands.

It is impossible at present to state the exact nature of these "lymphosarcomata." Their cells possibly arise from blood-forming cells and may be teratogenous.

### CLINICAL DIAGNOSIS.

Early diagnosis is important. Mr. Hugh Lett removed a testicle which contained near the hilum a spheroidal-celled tumour only 2 cm. in diameter. The veins of the lower part of the spermatic cord were nearly all filled by growth. But in spite of this the patient was alive and well when last heard of, 12 years after the operation. There are no specially distinctive features about the swelling produced by tumour of the testicle, and the condition is frequently confused with hæmatocele, gumma, and tuberculous epididymitis. Palpable lumbar glands are, of course, diagnostic, but the diagnosis should be made before the appearance of the metastases if it is to be of any practical value. To appreciate the finer points of a scrotal swelling it is best always to examine the patient in the recumbent position.

*Hæmatocele.*—When a hæmatocele is large and its blood content still for the most part fluid, it may be distinguished from a large testicular tumour by the fact that its surface is uniformly smooth, whereas in tumour small nodular projections can almost always be felt on some part of the surface. French diagnosticians lay stress on the fact that the head of the epididymis is not palpable in hæmatocele, but as it is always invaded by growth, or greatly compressed, in large tumours of the testicle, this point is of little value practically. It is almost impossible to distinguish between the old solid and calcified hæmatocele and a tumour, but the treatment is the same for both.

*Gumma.*—It is scarcely an exaggeration to say that the Wassermann reaction should never be employed in the differential diagnosis of gumma and neoplasm of the testicle. A positive Wassermann reaction indicates the presence of a syphilitic lesion, but that lesion may not be the one under surgical observation. In three cases of this series the discovery of a positive Wassermann reaction resulted in a long and unnecessary delay of operative treatment, while the patient received injections of novarsenobillon. A simple and effective method of distinguishing the gumma is provided by the oral administration of mercury and iodides. The effect of this mixture upon a gumma is most dramatic: often within three days the testicle begins to shrink. It is safe to say that if within a week there is no change in its size, then the swelling is not a gumma. This method should be used in all doubtful swellings, for the delay of operation is negligible. In my experience the mixture of mercury and iodides has no effect upon the size of tumours.

*Tuberculous Epididymitis.*—Tumours of the testicle frequently, though not invariably, arise in the neighbourhood of the rete testis, and growth may advance at an early stage into the mediastinum testis and the lower end of the spermatic cord so as to simulate an enlargement of the epididymis. Such cases are frequently mistaken for tuberculous epididymitis, and I know of no constant rule by which to distinguish them. The absence of beading of the vas deferens and nodular enlargement of the prostate by no means excludes tuberculous epididymitis, and a definite diagnosis may only be possible at operation. All doubtful cases should be submitted to exploration.

*Hydrocele.*—In cases of common hydrocele the question may arise, either on clinical examination or at operation, as to whether the testicle contains a tumour. While it is unwise to be dogmatic, it is safe to say that the association of a *large* secondary hydrocele with tumour must be an event of extreme rarity. John Hunter [23] said that he had never seen a case. By far the largest secondary hydrocele in this series contained 10 oz. of fluid. In cases like this last it is useful to aspirate the fluid in order to feel the testicle. But in most cases there is little fluid and the use of the exploring needle is entirely contra-indicated, for it provides no useful information.

### TREATMENT.

The benign typical teratomata can occasionally be dealt with by enucleation, but as a rule it is more satisfactory to perform orchidectomy. Orchidectomy has been, and still is, the treatment most generally employed for malignant tumours of the testicle, but the frequency with which the disease recurs in the lumbar glands has led surgeons to devise a more radical operation. In its present form this operation aims at the removal of testicle, spermatic cord, intra-abdominal spermatic vessels and lymphatics, and the lumbar glands, all in one piece. The operation was introduced into this country by Sir John Bland-Sutton [24] in 1909, and the time is ripe for us to inquire into its merits as compared with the more simple operation of orchidectomy. I propose, therefore, to place before you the results of the London Hospital series.

During the last 18 years, 1908–1925, 74 cases were treated by operation, 55 by orchidectomy, and 19 by the radical operation. All cases recovered from operation and were discharged from hospital. The after-results were traced up to the end of 1925 in all but six cases, with the assistance of the Registrar-General in 11 cases. Recurrence of the disease proved to be extremely rare after two years, and estimations on the basis of a three-year cure are, therefore, approximately accurate. One case in which death from influenza and broncho-pneumonia occurred over three years after operation has accordingly been regarded as a cure. Patients in whom the lumbar glands were already palpable on admission have been considered incurable, either by orchidectomy or by the radical operation.

*Table Showing Results of All Cases up to the End of 1922.*

| | Orchidectomy. | | Radical operation. |
|---|---|---|---|
| 1. Untraced .. .. .. .. | 5 | .... | 1 |
| 2. Lumbar glands palpable before operation .. .. .. .. | 2 | .... | — |
| 3. Died of metastases (excluding Group 2) .. .. .. .. | 24 | .... | 11 |
| 4. Died from other causes .. .. | — | .... | 1 |
| 5. Alive and well .. .. .. | 12 | .... | 4 |
| Total .. | 43 | .... | 17 |

From the table, which gives the results of all cases up to the end of 1922, it is seen that the rate of recovery is, after orchidectomy, 83·3 per cent., and after the radical operation 31·2 per cent. These figures are not quite comparable, for it so happens that relatively more spheroidal-celled tumours were treated by orchidectomy, whereas most of the cases treated by the radical operation were atypical teratomata, tumours of greater malignancy. It follows that the radical operation was set a harder test than the local operation.

On the whole, therefore, I am of the opinion that the results are slightly in favour of the radical operation. Yet it is questionable whether they are a sufficient improvement over the results of orchidectomy to justify the added risk. The London Hospital figures of 19 radical operations with no [illegible] a true indication of this risk, for the 77 cases reported or collected from the literature by Hinman and his associates[25] show an operative mortality of over 10 per cent.

There are certain a priori reasons against the radical operation. Handfield-Jones,[26] who has recently mapped out the lymphatic drainage of the testicle, has confirmed the conclusion of Jamieson and Dobson[27] that complete removal of the lumbar glands and lymphatics is a surgical impossibility. Again, the operation itself is so often disappointing: either there are metastases so closely adherent to the aorta or inferior vena cava that they cannot be removed, or there are no metastases, and the surgeon can find nothing to remove but the spermatic vessels and one or two small lymph glands—a very small amount of tissue for such a large operation. Hinman, however, has collected or described four cases in which the lumbar glands removed at operation were found to contain secondary growth. The patients were alive and well over four years after operation. These cases would probably not have been cured had they been treated merely by orchidectomy, though it is well to note that at present we have no definite proof that lymph glands are not capable of destroying small secondary deposits of tumour tissue.

This concludes the evidence for and against the radical operation. That it is meagre is not surprising when we recall that the operation has only been practised for 20 years and that the number of cases is small. I do not think, therefore, that we can with equity reach a final decision. The London Hospital cases show that the radical operation can be performed with no immediate mortality. In view of this and of the results so far obtained, I consider that the radical operation is warranted a further trial.

In this series treatment of metastases by X rays has been entirely unsuccessful. Some workers have reported good results from the use of radium, but of this I have had no experience.

In conclusion, I would like to thank the visiting staff of the London Hospital for permission to study their cases and for much helpful advice. The pathological material upon which this lecture is based has been collected and carefully recorded by Prof. H. M. Turnbull, director of the Pathological Institute of the London Hospital, and by his assistants, in particular Dr. W. W. Woods. To Prof. Turnbull I am deeply indebted for allowing me access to this material and for his constant inspiration and assistance.

### BIBLIOGRAPHY.

1. Wilms, M.: Zeigler's Beiträge, 1896, xix., 233.
2. Ewing, J.: Surg., Gynæc., and Obstet., 1911, xii., 230.
3. Adami, J. G.: Principles of Pathology, General Pathology, 2nd ed., London, 1909, p. 653.
4. Schlagenhaufer, F.: Wien. klin. Woch., 1902, xv., 571.
5. Hinman, Gibson, and Kutzmann: Annals of Surgery, 1925, lxxxii., 557.
6. Hobday, F.: Proc. Roy. Soc. Med. (Sect. of Comp. Med.), 1923, xvii., 31.
7. Verneuil: Archives Gén. de Médecine, 1855, i., 641, and 1855, ii., 24.
8. Lexer, E.: Arch. f. klin. Chir., 1900, lxi., 647.
9. Paget, J.: Med.-Chirurgical Trans., 1855, xxxviii., 247.
10. Lecène, P.: Bull. et Mém. Soc. Anat. de Paris, 1909, lxxxiv., 349.
11. Jeanbrau and Massabuau: Annales des Malad. des Organes Génito-Urinaires, 1908, xxvi., 241.
12. Ferrero, V.: Archivio per le Scienze Mediche, 1922, xlv., 89.
13. Langhans, Th.: Deutsche Chirurgie, Lief. 50 B., Stuttgart, 1887.
14. Dew, H.: Malignant Disease of Testicle, London, 1925.
15. Garbarini, E.: Il Morgagni, 1899, vol. xli., pt. 1, p. 137.
16. Cooke, Joan V.: Johns Hopkins Hosp. Bull., 1915, xxvi., 215.
17. Warthin: Cited by Cooke.
18. Starling, E.: THE LANCET, 1905, ii., 581.
19. Sacchi: Quoted by Reuben and Manning, Archives of Pediatrics, 1923, xl., 27.
20. Pott, P.: Chirurgical Works, London, 1779, ii., 459.
21. Russell Howard: Clinical Journal, 1924, liii., 1.
22. Curling, T. B.: Diseases of Testis, London, 1878.
23. Hunter, John: Works (edited by J. F. Palmer), London, 1835, i., 469.
24. Bland-Sutton, J.: THE LANCET, 1909, ii., 1406.
25. Hinman, F., et al.: Surg., Gynæc., and Obstet., 1923, xxxvii., 429.
26. Handfield-Jones, R. M.: THE LANCET, 1924, ii., 850.
27. Jamieson, J. K., and Dobson, J. F.: THE LANCET, 1910, i., 493.

# Lumleian Lectures
ON
# ENDOCARDITIS.

*The Third* Lumleian Lecture in 1926, delivered before the Royal College of Physicians of London on March 30th,*

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I PROPOSE now to deal with the anatomical and bacteriological parts of my subject, and then with considerations of diagnosis, pathogenesis, and treatment.

### STATE OF THE VALVES PRIOR TO THE ONSET OF SEPTIC ENDOCARDITIS.

This is an important point. In my original series of 118 post-mortems in 150 cases I found evidence of old valvular disease in 80 per cent. The figures of other observers approximate very near to this. But it is to be noted that this figure refers to acute and chronic cases when taken together. If we consider acute cases alone the figure is undoubtedly much smaller. If we take the series of cases of ex-soldiers by themselves we find it smaller still. Thus, out of 13 autopsies in this class, Starling found scarring from old rheumatic disease in one only. Carey Coombs's experience is much the same. The inclusion of 20 cases of ex-Service men explains why, in a second series of 162 cases at St. Bartholomew's Hospital, the figure is only 50 per cent. Sir John Rose Bradford, in his Lumleian lecture in 1920, stated that, despite the prevalence of sepsis in the wounded during the great war, infective endocarditis was uncommon; that a number of acute and rapidly fatal cases of the disease occurred in men in whom no primary source of infection could be found post mortem; and that in these cases the infection had attacked healthy valves. Summing up, therefore, it may be said that in acute cases generally, and in the chronic ex-Service cases, there is a notable absence of pre-existing valvular disease; in chronic civilian cases there is a marked preponderance of pre-existing valvular disease. It has, perhaps, been too readily assumed that the nature of the pre-existing valve damage found at autopsy is generally rheumatic in origin. Care must be taken, as Libman has pointed out, to distinguish the residues of rheumatic infection from the residues of an old septic endocarditis, since it is now known that this latter process may recur after years of apparent freedom from active infection. The patient's history is, therefore, of great importance in judging the nature of cicatricial and of sclerotic changes in the valves. Since pericarditis is known to be quite rare in chronic septic endocarditis, evidence of this at autopsy is much in favour of old rheumatic infection. The type of myocardial disease, if this be present, may also assist in a correct interpretation of the findings.

Of the *valves affected* it is again important to distinguish acute from chronic cases and civilian chronic cases from ex-Service chronic cases. In acute cases the incidence of mitral and aortic disease is probably about equal. Of 34 such cases due to *Streptococcus pyogenes*, Thayer found the aortic valve involved in 20 cases, the mitral in 26. Gonococcal infection, however, tends to attack the aortic valve by preference. Thayer's cases, forming the fullest series of which we have details, showed 66 per cent. aortic and only 19 per cent. mitral. There were right heart lesions as often as mitral in this infection. Of 40 cases of pneumococcal endocarditis, Thayer found the aortic cusps involved in 20, the mitral in 13, and the valves on the right side of the heart in seven only, thus disposing of the fallacy that pneumococcal infection is prone to attack the right heart chiefly. In chronic septic endocarditis, however, there is a preponderance of mitral infections in civilian cases, and a still greater preponderance of aortic cases in ex-soldiers.

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* Lectures I. and II. appeared in THE LANCET of April 3rd and 10th respectively.

*Mural Infection.*

Mural infection is, I believe, more common than is generally thought. I found instances of this condition in 52 per cent. of 118 post-mortems. Thayer's figure is as high as 84 per cent in chronic cases. Auricular infection is much more common than ventricular The occurrence of mural endocarditis is usually attributed to the influence of pre-existing scars from old rheumatic disease. The occurrence of mural lesions without valve lesions must be quite rare. I cannot find any case in the literature which is at all comparable with one which I described in my original series, and where, fortunately, a *post-mortem* examination was possible. The disease had lasted for over two years, the type being very chronic, the fever very mild There was no sign of valvular disease during life. This patient was for some weeks in a sanatorium on account of pyrexia, sweats, and malaise, it being thought that she might be a case of pulmonary tuberculosis without physical signs. She developed multiple infarction of the spleen and blood cultures were positive. Eventually she died of cerebral embolism. Post mortem there was found a small area of fungating auricular mural endocarditis, situated well above the mitral orifice, the cusps of which were natural. The importance of knowing that such cases exist lies in the fact that the disease may be present in the absence of signs of valvular mischief. But, as already stated, such cases are rare

PARASITOLOGY.

I pass now to a consideration of the parasitology of endocarditis. I need not dwell upon the infecting agent in the syphilitic cases, except to point out that all the evidence favours the view that the route of infection is by the vasa vasorum to the middle coat of the aorta, and that it is, therefore, probable that the aortic cusps are infected likewise from the depths rather than from the surface.

Nor must I dwell long upon the old controversy anent the *causative agent in acute rheumatism* Of late years there has been a growing tendency to consider the streptococcal origin of acute rheumatism as proved But clearly this is not so, and it seems to me that we do but obstruct further research by so premature a conclusion. With due deference to Poynton and Paine, whose thorough and masterly work all must admire, it is to be doubted if the real picture of acute rheumatism has yet been experimentally produced in animals by the use of the "diplococcus rheumaticus." Nor is there, so far, anything like unanimity amongst the many observers who have given pains to the question of blood cultures in rheumatic fever, and to the bacteriological investigation of fatal cases of the disease. Unfortunately, the opportunities for this particular research become less and less with the decrease in incidence of severe rheumatic fever, but when the disease was rife, and even now, when it occurs, the number of negative results in the hands of skilled bacteriologists were, and are, strikingly large And this, too, when the most approved culture methods are adopted. Such strains of cocci as are occasionally found in these cases seem to possess no special features, and considerable weight must be attached to the fact that the blood in cases of acute rheumatism has failed to yield any specific serological affinity, even for those homologous streptococci that have been isolated from the circulation of rheumatic patients. Such is the experience of Swift and Kinsella, who record the following striking case A streptococcus was isolated from the blood of a patient in a first attack of rheumatic fever. A relapse occurred after a year of good health, and a second streptococcus was this time isolated. The two streptococci differed culturally and serologically. No complement-fixing antibodies against the first streptococcus could be demonstrated in the blood at the time of the second infection. Clawson and Bell have quite recently claimed to obtain a streptococcus by blood culture in 50 per cent. of cases of rheumatic fever Yet they, again, failed to find antibodies in the blood at a serum dilution higher than 1 in 50. On the other hand, Clawson considers that he has produced lesions in rabbits' hearts which were morphologically identical with the Aschoff nodule by the use of rheumatic strains of streptococci. He therefore concludes that streptococci, generally of the viridans type, are responsible for rheumatic heart lesions in man. This vexed question must still be considered as undecided.

In *acute cases of septic endocarditis* the nature of the infection calls for no special comment. Positive blood cultures are forthcoming in nearly all cases, and, as already remarked, the micro-organisms are of a highly virulent type.

Until the rôle of the streptococcus in acute rheumatism is more clearly defined, whether, for example, it is the primary cause or only present in the disease as a secondary infection, we cannot profitably discuss the question if some of the cases of *chronic septic endocarditis* may not be justly regarded as cases of "malignant rheumatism" Such a conception is only rendered probable by assuming, with Poynton, that the rheumococcus remains latent in the endocardium for, it may be, many years. This seems less probable than that the disease is the result of a new infection grafted upon the old damaged valve, and this view is the one most generally accepted at present.

Positive blood cultures in the chronic cases are, as already mentioned, by no means invariable. In my early series of mixed acute and chronic cases I found micro-organisms in the blood in nearly 90 per cent. of cases at some stage of the disease. Libman gives the same figure for his cases. But in a second recent series of 102 cases at St. Bartholomew's Hospital the number of positive blood cultures was only 47 per cent. This was largely due to the inclusion in the series of a much larger proportion of chronic cases, and especially of 20 ex-Service cases; in these 20 cases the number of positive blood cultures was only 30 per cent. This paucity of positive cultures in the ex-Service class corresponds with the experience of other observers. The micro-organisms found in these cultures are almost entirely streptococci; the exception is the strange one of Pfeiffer's bacillus, which crops up with extraordinary constancy in the series of all observers provided the number of cases in any series be not too small.

There seems little reason to doubt that the cocci recovered from the circulation during life, and also those isolated from the diseased endocardium after death, by various observers have been of the same type, though called by different names. The difference in names has depended upon the different principles adopted in the segregation of the streptococcus and pneumococcus groups. My original description of these cocci was based upon Gordon's well known work, in which the morphological and cultural characters of these micro-organisms were supplemented by biochemical reactions in various sugars. Working in conjunction with Andrewes we were able to trace very close affinities between the streptococci associated with chronic septic endocarditis and the salivary and fæcal types as differentiated by Gordon. Schottmüller's nomenclature was based largely upon the fact that these streptococci reacted in a special manner on blood-agar plates; hence his term *Strep. viridans.* Rosenow, on grounds which need not be entered upon here, claimed to have obtained evidence that these comparatively non-virulent cocci are modified pneumococci, and that by frequent passage through animals, and by special anaerobic cultural methods, they could be converted into micro-organisms indistinguishable from pneumococci and possessed of considerable pathogenicity. I am unaware that this work of Rosenow's has been confirmed. Libman is content to term the coccus most commonly found in chronic septic endocarditis *Strep. endocarditidis.* But when we consider questions of pathogenesis it is obvious that the nature and origin of these streptococci become matters of great importance. Too much attention cannot, therefore, be paid by bacteriologists to the life-history of these cocci and to their probable source.

This is, perhaps, a convenient place in which to refer to Libman's views upon what he terms the "bacteria-free stage" of chronic septic endocarditis. I have already confessed my inability to accept Libman's concept of the disease we are now considering as being a "subacute" rather than a "chronic" process. I gather that others have the same difficulty. I find that the last edition of Osler and McCrae's text-book of medicine includes two separate paragraphs; one is headed "subacute bacterial endocarditis" and the other, immediately following it, is headed "chronic infective endocarditis." But Libman makes it clear that by introducing the term "subacute bacterial endocarditis" he intends it to supersede the older name of "chronic infective endocarditis," and to include the cases formerly put into this category. I must now confess to another inability to follow Libman when he uses the term "bacteria-free stage" of the disease as being synonymous with "healed stage." This writer speaks frequently of "healed and healing cases" in one and the same term. Now I can understand a "healed" case; there seems no doubt, largely as the result of Libman's own observations, that cases of septic endocarditis do occasionally undergo spontaneous cure, and that the residues of the old infection are found post mortem. I can also understand a "healing" case; in many chronic infections we get evidence, both during life and after death, that the lesions show constructive, as well as destructive, changes; to mention only pulmonary tuberculosis as one example. But to group "healed and healing cases" together under this single term seems to suggest some new type of case the criteria of which have been made by no means clear.

Libman admits that in the so-called "bacteria-free stage" of the disease some degree of pyrexia is often present, that anæmia is marked, that embolism goes on, that Osler's nodes and petechiæ appear, that the patients get progressively more and more toxic and eventually die. But is not this passage from a more active stage of the disease to a more passive stage exactly what we see in some, indeed, in a good many, other chronic infections? In chronic pulmonary tuberculosis, again; in lymphadenoma; in chronic *Staphylococcus aureus* pyæmia; in syphilis; in malaria. In chronic septic endocarditis, as in these other diseases, patients not infrequently reach a cachectic stage in which the infection peters out, as it were, at the same time as the patient. The fight has been to a finish and neither party has won. Actually, the micro-organism has won, but only just. It can generally be demonstrated, though perhaps with difficulty, dug in and out of sight. And Libman admits this fact. I instance *S. aureus* infections of a chronic kind in particular as giving us a somewhat similar picture to that which is sometimes seen in chronic septic endocarditis. After a long and tedious illness the patient, cachectic, wasted, anæmic, enfeebled by his prolonged toxæmia, dies exhausted. Blood cultures have been sterile for weeks, even months, and the temperature has been at a much lower level than formerly. At first we were jubilant when these things happened. But they availed nothing, and we became aware that though the fire of the interaction burned much lower the disease was still progressing. We make a post-mortem examination, perhaps; there is no obvious lesion; then, tucked away in some remote corner, we find a collection of inspissated pus—in the sheath of the psoas muscle, perhaps, or in the centrum ovale of the brain. From these old, but still smouldering, foci *S. aureus* is recovered in scanty numbers.

We must, of course, distinguish these so-called "bacteria-free" cases from the periods occurring earlier in the disease during which blood cultures are oft-times negative, yet the patient is obviously in an active stage of his infection. There are possible reasons for these times of relative, or perhaps absolute, a-bacteriæmia. (1) They may be due to the covering over of the colonised bacteria in the valve cusps by a layer of fibrinous material which, for the time being, prevents the paying out of cocci into the blood stream. (2) Or they may be the result of a rise in the bactericidal or other immunising antibodies in the blood, so that the circulation is rendered sterile within the limits of the amount of blood taken for purposes of the culture. Doubtless, there are other causes which are as yet hidden from us. Mervyn Gordon has raised the question whether there may not be some filtering mechanism at work; he also reminds us of the great tendency of bacteria to yield to gravity. I should like to add the suggestion that in these cases something akin to the process of centrifugalisation may go on, by which the bacteria, which are thrown into the circulation, are sedimented in various peripheral organs, leaving the blood stream relatively free. A close study of the cases makes it more and more apparent how innumerable are the embolic events that take place and, therefore, how consonant with actual facts such a hypothesis may be.

### DIAGNOSIS.

As the result of my earlier experience I was led to the view that to establish a diagnosis four cardinal points were necessary: multiple embolism, the signs of endocarditis, the isolation of a micro-organism from the blood, and pyrexia. Now that we are more familiar with the clinical picture, and have added certain other well-recognised signs, the diagnosis becomes highly probable, though perhaps never quite certain, without the third and certainly without the fourth of these features. Thus, signs of multiple embolism, with endocarditis, in a patient having clubbed fingers and an otherwise unexplained anæmia, constitute a syndrome which scarcely admits of any other conclusion. In arriving at a decision, however, it is well to remember what a very grave prognosis a positive diagnosis carries with it in the present state of our ignorance of effective treatment. No doubt we shall be able, in years to come, to detect the disease at an earlier stage of its course, in which case we must be satisfied with less severe criteria. It may even be desirable to treat many patients as suspects, and remain uncertain, in the event of a satisfactory issue, if they were, or were not, larval instances of the disease. In other words, we must strive to anticipate rather than merely to recognise, when present, the fully-developed picture. There are other very suspicious combinations of signs and symptoms than that just given, but granted that neither pyrexia nor a positive blood culture is essential to the diagnosis it is impossible at present to construct a syndrome that does not include the feature of multiple embolism. And it is questionable if, once this process is in operation, we are not already too late in our efforts to arrest the disease.

We do not know, unfortunately, if there is an early apyrexial stage in the disease. We certainly do know that, though every case is probably at some time in its course pyrexial, apyrexial periods of one, two, or even three weeks are by no means uncommon during the later stages. Starling tells of an extraordinary instance of prolonged apyrexia lasting 17 weeks. It is clear, therefore, that the absence of pyrexia at any particular time of observation by no means excludes the diagnosis.

Be the significance of negative blood cultures what it may, it is agreed that the diagnosis can frequently be made without evidence of bacteriæmia at the time of examination, and, indeed, even though one or more subsequent efforts are also negative. Libman has described localised tenderness over the lower end of the sternum with light pressure as a common symptom. I have found this present in several cases, but since I have also found it to be not uncommon in cases of severe anæmia, without evidence of endocarditis, I conclude that its importance in diagnosis depends upon the absence of this latter condition. Such tenderness is sometimes very marked and very localised in Addisonian anæmia.

We are beginning to see light on the clinical side, and also on the side of gross morbid anatomy, in relation to the earlier stages of the disease, and this light may soon help in the histological and bacteriological sides by suggesting new lines of research. Several authors have described cases of mild bacteriæmia, the cocci being of the same type as those associated with chronic septic endocarditis, and in which the clinical analogies with this latter disease are such as to suggest they may have been abortive cases of it. Some of the cases have been followed for a period sufficiently long to make sure that they have recovered. It is tempting to consider them instances in which, as it were, the disease, as we usually know it, has missed fire.

### *Recurrence.*

Cases of recurrence, too, are being brought to light. I have seen two such cases. In one of these I was very doubtful, when the patient first came under observation, if I was not dealing with a case of septic endocarditis. There were signs of aortic regurgitation, and the patient was admitted to hospital on account of mild pyrexia, purpura, and arthritis. The spleen was palpable. Blood cultures were negative. The man was an ex-soldier with no history of any cause for his valvular disease. After two months' observation he was discharged, being given the benefit of the doubt. He worked continuously as a postman for 12 months, feeling quite well. He was then admitted again to hospital, pyrexia and joint pains of an erratic kind having returned. The diagnosis of chronic septic endocarditis did not now admit of any doubt. In the other case there was again a clear interval of 12 months of good health between an attack of right hemiparesis associated with mitral regurgitation, slight pyrexia, clubbed fingers, and anæmia, and a second admission on account of a left hemiplegia, which was followed a month later by cerebral hæmorrhage.

It is possible, of course, that in neither of these cases was the interval between the two periods of observation sufficiently long to exclude the question of very protracted infection with unusually long remissions. But Libman and others have reported cases in which the interval between the attacks has been much longer. So that, unless we again take the view that the coccus can lie dormant in the endocardium over a period of years, we must consider the cases as true reinfections.

## PATHOGENESIS.

When we turn to questions of pathogenesis we are faced with a whole series of unknown factors. We seem to know a good deal about the mechanism of the disease once the endocardial infection is established, and even our knowledge of the associated bacteria is by no means small, but the initial phases in the process of endocardial colonisation are still hidden. We assume, perhaps rather too readily, that the source of the invading and infecting bacteria is one or other of the areas which for convenience we term areas of "focal sepsis." Such areas are conceived of as portals of entry of bacteria into the circulation. These areas have been recorded in many cases of the disease as though the relation between them and the heart infection were actually proved. Blumer has collected these records. It does not surprise us to read that the teeth and the tonsils head the list, that the female generative organs come next, and that the bronchial tract follows. But between the very common finding of salivary streptococci in apical tooth abscesses and the relatively uncommon finding of salivary streptococci in the endocardium there is a wide gulf to bridge. With the whole alimentary tract teeming with streptococci of this and of allied types, it is quite a question if the area of focal sepsis is more than an epiphenomenon in the process of deep-seated infection.

### *Mechanism of Invasion of Valves.*

If we now consider the mechanism of invasion of the infected valve we are equally in the dark. Does the coccus invade the valve from the coronary route or from the general blood stream bathing the outside of the valve? The argument for and against both routes, though old, is still open. Carey Coombs has quite recently convinced himself that, whereas the rheumatic virus reaches the cusps, and produces a valvulitis from within these structures, the bacteria in septic endocarditis attack them from the blood circulating around the cusps. The author's important work in connexion with the endocarditis of swine erysipelas is adduced in support of his views. But we still lack adequate demonstration of this difference of the modes of invasion in the two diseases. Whereas some authors adduce the fact of extravascularisation resulting from old inflammation as evidence that the coronary route is the likely one in septic endocarditis, others consider the scarring of the tissues resulting from the same process as liable to favour invasion from the surface. Certainly, if analogy elsewhere goes for anything, it seems more likely that scarred tissues in this situation would be invaded from the surface rather than from the depths. But this latter hypothesis presupposes an initial septicæmia, or at any rate a bacteriæmia, and probably of a massive kind. Of this there does not seem to be any clinical evidence; the disease is very insidious in its onset in nearly every case. Moreover, we are now faced with a difficulty with which the war cases have for the first time familiarised us—namely, that in many of these cases there appears to have been no old valve injury, or none the existence of which was apparent. Yet when we recollect that it is in the hearts which possess minor valve injuries, and not in those in which the valves are seriously damaged, that by preference the disease develops, we must pause before we conclude that the aortic cusps in these ex-soldiers were above suspicion. In this connexion are to be considered the remarks already made concerning congenital defects, such as fusion of cusps, and the effects of strain upon such mechanically handicapped structures. It is rather a terrible thought, and yet it may well be true, that starting life with two aortic cusps instead of three determines a man's ultimate downfall by means of slow but inevitable sepsis, be the conditions of his life what they may. There are many persons in the possession of relatively good health who have minor degrees of valvular disease with good myocardial tone. Is there any way of ascertaining which of these are to be regarded as candidates for endocardial infection? At present the answer is that there is no such way. It is a point worthy of consideration, for if some observations arose by which such predisposition may be recognised this would be a matter of great importance.

But if we are still much in the dark concerning the mechanism of the valve invasion and colonisation, we are still more in the dark as to why it is that such feebly virulent bacteria gain so firm a foothold and pursue such relentless warfare. Is it mainly the general resistance that is at fault, or is it mainly the local tissue resistance? Does the coccus succeed in immunising itself against the natural protecting substances of the blood and tissues? These are some of the questions that still await our answers. To which may be added the fact that the process of chronic ulceration in general in the body still holds some mysteries we have never yet explained.

### *Is Septic Endocarditis a Specific Disease?*

I have spoken of one great contrast between rheumatic endocarditis and septic endocarditis—namely, the great tendency to early and considerable involvement of the heart in the former and the great freedom from intrinsic disease of the heart in the latter condition. I now turn to another great difference between these two diseases. In rheumatic heart disease we feel convinced that we are dealing with the work of a specific agent, and this conviction is not shaken by some doubt as to the causative nature of the infecting agent in certain cases of mitral stenosis. In septic endocarditis, on the other hand, we appear not to be dealing with a specific disease at all—that is, if we are right in our conclusions that the micro-organisms found to be associated with the disease during life and in the post-mortem room represent the only infecting agents present. I say this because, although I do not know that anyone has advanced evidence for such a view, it is just possible that all the bacteria associated with the pyæmic state in which the endocardium and various peripheral organs are concerned are of the nature of secondary infections, the primary infection being as yet unknown and hardly suspected. But if we assume that the micro-organisms that we deal with every day in the disease are the sole causes of the infection, then we are faced with this striking fact—that the same disease picture may be produced by a variety of different micro-organisms. Even if it be argued that Rosenow's conclusions relative to the association of pneumococci with the disease are not yet accepted, and that the gonococcus cases are not really chronic (though two patients in Thayer's series lived over six months), there still remain, in addition to the streptococcal cases which bulk so largely in the whole number, the cases due to Pfeiffer's bacillus. Between these last-named cases and those due to streptococci there cannot, so far as I know, be distinguished any difference either clinically or by naked eye morbid anatomy. And yet we know of no affinities whatever between the streptococcal group of micro-organisms and the group of which *B. pfeiffer* is a prominent member. But the lack of specificity in the disease would appear to go further than this. Individual cases within the streptococcal group show a strange lack of uniformity when investigated serologically. Kenneth Stone, working in Gordon's laboratory upon complement-fixation in streptococcal infections, found that the serum from cases of chronic septic endocarditis gave positive reactions with the homologous cocci obtained by blood culture, with a titre even as high as 1 : 4800, but that this same serum gave very little cross fixation with heterologous cocci (that is, with cocci obtained from other cases), and frequently no cross fixation occurred at all. It would almost appear, therefore, as though the cases, far from being specific as a group, are specific only as individuals. The bearing of all this upon the difficulties of immune therapy is obvious.

There is still, it seems to me, another striking fact in connexion with the bacteriology of the disease, and that is the absence of any evidence that more than one strain of streptococcus is present in the same case. Nor has any case yet been described in which streptococci and Pfeiffer's bacillus have both been present. If the source of the endocardial infection is an area of focal sepsis, as is commonly supposed, it seems strange that there should not occur in the vegetations and in the circulation, at least occasionally, more than one strain of these common invaders. That this is so strongly favours the view that the streptococci are not performing the rôle of secondary, but of primary, infections.

### Treatment.

I shall not stay to deal with the treatment in cases of syphilitic disease. In rheumatic endocarditis the treatment is that of acute and recurring rheumatism. Into this again I shall not go, reserving my time rather for considerations that apply to septic cases. When faced with a case of acute infective endocarditis the treatment is that of the septic focus, when this is present, and also of the pyæmia complicating it. Immunotherapy has, perhaps, a slightly better chance of rendering assistance here than it has in chronic cases; it should, therefore, be given a thorough trial. The vogue at present is the process known as immuno-transfusion, and it is, perhaps, too early yet to say what the results of this method are. All cases should, wherever practicable, be treated in the open air.

I now turn to the treatment of the chronic type of septic endocarditis.

#### *Prophylactic Measures.*

In one of his most recent communications Libman is good enough to credit me with being the first to emphasise the importance of *prophylactic measures* in the treatment of this disease. Although there is no doubt he is correct in this, he is kind enough not to point out the paucity of the constructive suggestions which I made under this heading in 1909. I dealt almost entirely with the importance of treating the various forms of oral sepsis, and with considering certain methods by which the streptococci of the intestinal tract might be kept from transgressing the barriers which usually suffice to keep them outside the blood stream. That these measures of preventive treatment are of more importance in patients who have residual endocardial lesions, of whatever origin, than in other persons will scarcely be questioned. Yet it is by no means an uncommon experience to find devitalised teeth with demonstrable apical sepsis in these patients. The well-established sequence of a septic endocarditis arising as a direct consequence of the extraction of such teeth under local anæsthesia, together with the isolation of a salivary type of streptococcus from the blood in such cases, should surely lead to a rule of treatment by the observance of which no dead teeth and no obvious pyorrhœa are permitted to be present in such patients. It is unfortunate that a recent obsession in regard to sacrificing all teeth that are in the least degree suspicious in every patient has militated in the public mind against such a preventive measure being followed in selected cases. The question of septic tonsils is much less simple, because the criteria by which we judge these organs are notoriously vague, whether we consider the matter from the point of view of the general physician, the throat specialist, or the bacteriologist. Tonsils are sometimes condemned because cultures taken from them grow streptococci of the hæmolytic, long-chained, or pyogenes type, on the ground that this is a more highly pathogenic type than others. But it is obvious, from what has been said, that in the present connexion such a finding should not condemn the tonsils any more than if the cultures yielded the viridans, short-chained, or salivary type; if, indeed, the condemnation should be as strong. The present state of our knowledge of the streptococcus group makes the statement so often occurring in bacteriological reports, that "cultures from the tonsils give no pathogenic strains of streptococci" of no service when we are considering the prophylactic treatment of endocarditis. Until we have more definite guidance along these lines we shall probably act most wisely by deciding the question of the enucleation of tonsils on their general merits rather than upon their bacteriological content.

In the direction of "intestinal disinfection," so-called, prophylaxis gropes in even greater darkness. There are problems here which we have scarcely begun to probe, but to think that security from subinfection lies in merely avoiding constipation, good though such advice may be, is to invite a rude awakening. We do not even know for certain that subinfection from the bowel bears any definite relation to the quantitative content of streptococci in this situation, or to the relative proportions of streptococci to coliform bacilli, though both of these things are generally taken for granted. Is it not a fact that we not infrequently make use of these and analogous findings to support a scheme of therapeutics, when the premises upon which such a scheme is based are quite lacking in proof? The suggestion of Besredka and others, that it might be well to employ antigens by the intestinal route in cases in which it is presumed that the initial interaction resulting from infection takes place in this situation has scarcely received so thorough a trial as it deserves. We may get some help from such a trial. We may also get some help from well-controlled observations relative to the effect of different diets upon the intestinal flora. Up till now very little work has been done on this point.

The injunction against undue strain, both physical and emotional, in persons having evidence of slight valvular defects, though indicated theoretically, is not likely to carry much weight. Yet it becomes our duty to give such advice in view of all the facts.

*Curative Measures.*

Curative measures now call for consideration. *Chemotherapy*, despite the enormous number of drugs that have been tried at one time or another and which I will not stay to catalogue, has so far been of little real help. And this is true by whatever route the drugs have been used. Yet it must not be concluded that we shall not ultimately find some remedy of a chemical nature which shall assist the tissues in their interaction with the infecting agent; for the crude notion that a chemical remedy can only help in microbic infections by a direct bactericidal action is, of course, no longer tenable. Of late years new claims have been made on behalf of arsenic, and especially when given intravenously. Needless to say, when the arsenobenzol series of drugs arrived they were given full trial in septic endocarditis, but, so far as I can find, without any permanently good results. Of immediately serious results by way of cerebral embolus I saw not a few, and I gather this is the experience of others. I have given Capps's sodium-cacodylate treatment a very thorough trial, but have so far seen nothing to lead me to the conclusion that the patient has benefited more than is usual with so good a hæmatinic remedy as this proves to be in many infections. Capps gives daily injections of the drug intravenously, beginning with 1 gr. and increasing gradually up to 5 gr. In all I have treated 12 cases, and I have in half of these given larger doses than Capps has recommended. I have also, following Capps's suggestion, followed up the treatment for many weeks. There is certainly this to be said for the drug, that it is singularly free from ill-effects.

I think it is clear, from all we know of the disease, that recovery, whether by the aid of remedies used or occurring spontaneously, must of necessity be very slow if it is to be safe. When we remember the characters of the vegetations, and the ease with which they separate off as emboli it is obvious that any remedy which acted as quickly as, for example, a grand lavage of the blood stream by some reputed blood antiseptic, would endanger death from cerebral embolism. And when we recollect the deep colonisation of the infecting micro-organisms in the valves, it is equally obvious that no such lavage is likely to dislodge or kill these, seeing they are to a large extent outside the direct blood stream.

As little credit can be given so far to measures of *immunotherapy* as to those of chemotherapy. And this applies to all the permutations and combinations of antigen and immune serum that the mind of the immunologist—not a mind lacking in fertility and inventiveness—has so far devised. The latest of these is immuno-transfusion, which, though it is claimed that this method raises the bactericidal power of the blood, has not so far been more successful than other methods. A method of treatment which raises the bactericidal power of the blood as tested outside the body gives us no guarantee that it will do this inside the body; or, if it does, that the rise in bactericidal power will be sufficient, within the limits of the method, to turn the scale against the infecting agent and in favour of the patient. These things would be very puzzling did we not know of stranger facts. The fact, for example, that, apart from any immune therapy whatever, the blood in many cases of chronic septic endocarditis is extremely rich in certain antibodies specific to the micro-organism isolated from the patient's circulation. And yet such patients may, all the time, be losing ground slowly but surely.

In opening a discussion upon chronic septic endocarditis at Cambridge in 1920, when speaking of curative treatment, I raised the point as to whether we ought not to deal with these patients on much the same lines as we follow in cases of chronic tuberculosis, bearing in mind, of course, the difference in the organs affected. I have of late years concentrated more and more upon non-specific measures as for a disease of "low resistance." I treat as many cases as possible in the open air, with sunlight, natural and artificial. I supplement this by a long series of intravenous and intramuscular injections of sodium cacodylate. Sometimes I have found, as others have, that simple transfusions of blood are of considerable help. These are the only measures I yet know of that seem to give the patients the best chance of overcoming their usually intractable infection.

It remains for me to thank you, Sir, and the Fellows, for your patience in giving me your attention during the delivery of these lectures.

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# THE
# SERUM TREATMENT OF DIPHTHERIA.

*Being a Paper read before the Fever Hospital Medical Service Group of the Society of Medical Officers of Health on Jan. 22nd, 1926,*

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IT is just over 30 years since antitoxin was discovered for the treatment of diphtheria, and it may be of interest to take a brief review of the results obtained with it and the progress which has been made in our methods of administration. For the first few years after its introduction in 1894 the serum used was often of uncertain strength and the dosage, according to our present standard, was very small; but in spite of this the results obtained were very definite, as shown by the improvement of patients after injection and the marked decrease in the case mortality. Physicians all over the world were soon impressed with the value of antitoxin, and its wide employment quickly revolutionised the former methods of treatment, especially the application of strong antiseptics to the local lesion, a procedure which, as now realised, must often have done more harm than good. The results obtained in those early years were sufficiently marked to convince the majority of physicians that in antitoxin we possessed a specific by which it was hoped diphtheria would soon be robbed of most of its terrors as a dangerous disease.

However, after 30 years' experience, during which antitoxin has been extensively used, we find that diphtheria still causes a large number of deaths in this country every year. And in comparing the deaths in 1924 with the number registered from the disease in 1871 we find that the decrease has been very small. Also, if we compare diphtheria in this respect with scarlet fever and typhoid fever, we find that during the past 54 years a much more marked and progressive fall has occurred in the annual deaths from these two diseases than from diphtheria. These figures are given in Table I.,[1] an examination of which shows that a continuous fall occurred in the mortality from scarlet fever and typhoid fever from the decennial period 1871–80, whereas the number of deaths from

TABLE I.—*Deaths from Diphtheria, Scarlet Fever, and Typhoid Fever since 1871.*

| Year. | Diphtheria. | Scarlet fever. | Typhoid fever. | Year. | Diphtheria. | Scarlet fever. | Typhoid fever. |
|---|---|---|---|---|---|---|---|
| 1871–1880* | 2,942 | 17,423 | 7,842 | 1911–1920* | 5,088 | 1,700 | 1,278 |
| 1881–1890* | 4,473 | 9,177 | 5,401 | 1920 | 5,648 | 1,430 | 537 |
| 1891–1900* | 8,067 | 4,829 | 5,340 | 1921 | 4,772 | 1,305 | 612 |
| 1901–1910* | 6,092 | 3,008 | 3,097 | 1922 | 4,075 | 1,382 | 465 |
| | | | | 1923 | 2,722 | 993 | 450 |
| | | | | 1924 | 2,501 | 888 | 496 |

* Average.

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[1] Annual Reports of Chief Medical Officer of Ministry of Health for 1924, 1919, 1920.

diphtheria increased and reached a maximum during 1891–1900—the period during which antitoxin was introduced.

Comparison of this nature, however, is not a fair criticism of the value of antitoxin. We know that scarlet fever has become much milder in type of late years and that the prevalence of typhoid fever has greatly diminished, and these factors mainly account for the diminished death-rate from these two diseases. A better idea of the value of antitoxin is obtained by comparing the case mortality of these diseases, and in Table II.[1] I have shown the notifications for the past 14 years with the case mortality of the three diseases calculated per 100 notifications. From this it will be seen that the notifications of diphtheria have not varied much during the past 14 years, but the case mortality shows a much greater fall than has occurred with the other two diseases.

TABLE II.—*Number of Notifications (N.) and Case Mortality (C.M.) of Diphtheria, Scarlet Fever, and Typhoid Fever since 1911.*

| Year. | Diphtheria. | | Scarlet fever. | | Typhoid fever. | |
|---|---|---|---|---|---|---|
| | N. | C.M. | N. | C.M. | N. | C.M. |
| 1911 | 47,802 | 10·24 | 104,651 | 1·80 | 13,852 | 17·54 |
| 1912 | 44,754 | 9·58 | 107,508 | 1·85 | 8,386 | 19·10 |
| 1913 | 60,903 | 8·72 | 130,707 | 1·60 | 8,203 | 18·21 |
| 1914 | 59,357 | 9·84 | 105,045 | 1·72 | 8,445 | 20·30 |
| 1915 | 53,597 | 10·92 | 127,086 | 1·89 | 6,304 | 21·81 |
| 1916 | 51,707 | 10·36 | 75,722 | 1·82 | 5,504 | 20·16 |
| 1917 | 43,315 | 10·32 | 48,871 | 1·57 | 4,601 | 21·23 |
| 1918 | 43,713 | 10·97 | 48,180 | 2·11 | 4,306 | 22·06 |
| 1919 | 53,918 | 9·05 | 82,398 | 1·48 | 3,447 | 16·73 |
| 1920 | 69,481 | 8·11 | 119,490 | 1·19 | 3,109 | 17·27 |
| 1921 | 66,606 | 7·17 | 137,073 | 0·95 | 3,835 | 15·98 |
| 1922 | 52,163 | 7·81 | 108,242 | 1·27 | 2,414 | 19·42 |
| 1923 | 40,009 | 6·80 | 85,603 | 1·16 | 3,211 | 14·01 |
| 1924 | 41,980 | 5·95 | 84,654 | 1·04 | 4,121 | 12·03 |

Case mortality rate calculated per 100 notifications.

It is a matter of no little difficulty to prove scientifically that antitoxin is a specific cure for diphtheria, as the fall in mortality rate since its introduction may be due to some extent to other factors, such, for example, as have led to the diminished death-rate from scarlet fever and typhoid fever. There are still a few medical men who do not consider the injection of antitoxin to be proper treatment for diphtheria, but their number is so small they can be disregarded.

There are also some who attribute the success of the treatment to the serum itself and not to any specific antitoxin contained in it. Claims have been made that equally good results[2] can be obtained with normal horse serum. A possible explanation of this view is that normal horse serum appears to have a stimulating action in some toxic and septic cases, and it is said to encourage phagocytosis. In this connexion I should like to say that in a number of cases which have been admitted to hospital as diphtheria but proved to be septic throats I have often noticed that the condition cleared up very rapidly after an injection of antitoxic serum, and I have been informed by several medical practitioners that in their experience serum injection appeared to clear up septic throats very rapidly.

There is, however, no proof that normal serum can take the place of antitoxic serum in the treatment of diphtheria. As regards the specificity of antitoxic serum, there is fortunately a sufficient mass of evidence available for one to affirm that it is of the utmost value in the treatment of diphtheria and should be administered to every case except perhaps the mildest. One item of this evidence which statistics prove is that antitoxin is of the greatest value when given early in the disease and that its efficacy diminishes with every day of delay in its administration. It can, I think, be safely stated that if all cases could be given an adequate amount of serum on the first day of disease the mortality would be reduced to nil.

### *Severity and Dosage.*

There is universal agreement about the importance of early treatment, but as to what constitutes an adequate amount of serum for any given case is a question on which there is still great diversity of opinion even among experts who have had many years experience of the treatment. One of the chief reasons for this is the absence of any definite sign or symptom by which one can be guided with any degree of certainty in estimating dosage. The amounts recommended in the literature for the different types of case are what individuals have found from experience to be sufficient. Unfortunately, however, the disease appears to vary in prevalence and in severity in different countries, in different areas of a country, and at different periods in the same area. Thus a scale of dosage which might be sufficient for the type of case prevalent, say, in the North of England, might not be adequate for the type prevalent in London. Table III.[1] shows the prevalence of diphtheria in different parts of England and Wales during the period 1911–20. From this it will be seen that the disease became more prevalent in London during the latter half of that period than in any other part of the country, and possibly also may have been of a more severe type.

TABLE III.—*Notifications of Diphtheria in the Years 1911–20. Rates per million.*

| Year. | London | Southern Co. | E. and Mid. Co. | N.W. Co. | Northern Co. | Wales. | England and Wales. |
|---|---|---|---|---|---|---|---|
| 1911 | 1637 | 1338 | 1267 | 1071 | 1423 | 1302 | 1324 |
| 1912 | 1572 | 1491 | 1125 | 961 | 1213 | 1208 | 1239 |
| 1913 | 1696 | 1552 | 1328 | 1104 | 1435 | 1404 | 1392 |
| 1914 | 2018 | 1686 | 1634 | 1177 | 1535 | 1540 | 1592 |
| 1915 | 2110 | 1679 | 1409 | 1136 | 1418 | 1428 | 1514 |
| 1916 | 2063 | 1456 | 1526 | 1261 | 1366 | 1349 | 1428 |
| 1917 | 2059 | 1308 | 1295 | 1105 | 1042 | 895 | 1284 |
| 1918 | 2066 | 1302 | 1246 | 1247 | 1096 | 965 | 1305 |
| 1919 | 2181 | 1471 | 1475 | 1265 | 1410 | 1207 | 1496 |
| 1920 | 3052 | 1836 | 1834 | 1341 | 1525 | 1930 | 1857 |

It is agreed among most experts that the size of the dose should be determined by the severity of the case irrespective of the age of the patient, and for this purpose the cases can be conveniently classified into mild, moderate, severe, and very severe. But here again individuals differ as to what constitutes a moderate or severe case. It is commonly stated that the amount of membrane present is the best guide to severity. This, however, is a variable feature. In very severe cases there is often so much swelling of the surrounding tissues that little or no membrane is visible, and when the posterior nares are involved it is impossible to see how much membrane is present. A better indication of severity in faucial cases is obtained from the extent of the tissue swelling, enlargement of the cervical glands, œdema of the neck, presence or absence of nasal discharge, and the appearance of the patient—i.e., whether he looks toxic or not.

The day of disease has also to be taken into consideration and the dose should be liberal for "late" cases; but beyond this the duration of the disease is not of very much assistance in the matter solely of estimating dosage. It is well known that in very severe cases coming late under treatment little or no benefit is often obtained even with a massive dose of antitoxin. Mild cases, on the other hand, usually only require a moderate amount of serum even though the disease has been of several days' duration. Thus the size of the dose should be gauged almost entirely by the severity of the case at the time it comes under treatment.

At this stage it may be convenient to refer to the scale of dosage recommended by four well-known authorities—viz., Park[2] (New York), the late Dr.

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[2] Diphtheria, Medical Research Council, 1923, pp. 166, 258, 259.

Ker[3] (Edinburgh), Thomson[4] (London), and Madsen[5] (Copenhagen). There is not a very great deal of difference between the scales recommended by Ker and Thomson except that the amounts advocated by Ker are on the average slightly smaller. This might possibly be accounted for by a difference in the type of disease prevalent in Edinburgh and London. Their scales range from 2000 to 50,000 units according to the severity of the case, and this may be taken as fairly representative of the dosage employed in this country. Park, in his scale, draws a distinction between the amounts necessary for children and adults. His maximum for a child under 15 years is 20,000 units, and 50,000 units for an adult. In this respect he differs from most authorities in this country who, on account of the greater fatality of the disease among children, more or less disregard the age of the patient in gauging the dose. Also I doubt if 20,000 units would be considered in this country an adequate amount for a child, say of 5 years, who was suffering from a very severe attack of faucial diphtheria. Madsen, again, differs from the other three authorities in advocating massive doses, over 200,000 units, for the most severe cases. He states that a relatively small amount of serum will suffice to neutralise the toxin circulating in the blood at the time of injection and check later intoxication, but that in order to obtain what he terms a "curative action"—i.e., detach toxin which has loosely combined with the tissues—it is necessary to give huge doses. In support of this claim he shows that after Prof. Bie had commenced to employ massive doses at the Blegdams Hospital the case-mortality was reduced to under 1 per cent., which is very low as compared with the rate in this country.

It is, of course, the very severe cases that furnish the majority of deaths in diphtheria, and the question arises: Can a larger proportion of these be saved by giving massive doses? This, unfortunately, is most difficult to prove. Some cases are admitted periodically to fever hospitals which are so severe and "late" that one feels sure that no amount of antitoxin would save them. In support, however, of the claim for large doses it may, I think, be safely stated that when a patient receives a liberal dose of antitoxin the symptoms subside more rapidly and there is less risk of paralysis than when the amount given has been on a small scale. As is well known, it is difficult to give an overdose of serum, and the only real argument against using large doses is the expense. If, however, economy is exercised in the dosage for mild and moderate cases one, I think, is justified in employing large doses, say in the neighbourhood of 100,000 units, in the hope of saving a number of the most severe cases.

### *Dosage and Mortality.*

I should like here to refer briefly to the scale of dosage employed at Plaistow Hospital and the results. In Table IV. I have shown the number of admissions, deaths, and fatality rate of the diphtheria cases treated since the hospital was opened 30 years ago.

It will be seen that the annual admissions show a more or less steady increase which became more marked during the war. Since then the numbers have remained high. The deaths, on the other hand, show marked fluctuations, the highest number, 82, being reached in 1907, after which there was a drop to 24 in 1913. The numbers rose again during the war and remained high until three years ago, when a marked drop occurred, the lowest figure, 18, being reached last year. The fatality rate also has varied, but shows a continuous fall in the past few years. These fluctuations in the annual number of deaths are to be accounted for mainly, I think, by periodic variations in the type of the disease.

During the past three years, though the disease has remained prevalent, the type has become milder. And I must add that in the areas where it has been most prevalent the public appear to have become more alive to the dangers of diphtheria. In recent years it has become a common practice for parents to bring children with suspicious throat affections direct to the hospital if they have any difficulty in obtaining the service of a general practitioner. The number of cases admitted "late" through neglect of relatives in seeking medical advice has diminished. A few years ago we commenced to examine swabs for the medical practitioners, but I cannot say that this has affected the mortality from the disease. Two of the deaths last year were indirectly due to swabbing. In these two cases the practitioner swabbed the throat on first seeing the patient, but the swab proved negative, and it was not until about three days later, when the condition became very obvious, that the patient was admitted. I think there is a definite risk that if a practitioner gets into the habit of swabbing all suspicious throats he will soon become unable to diagnose diphtheria from its clinical signs and symptoms.

TABLE IV.—*Plaistow Hospital. Admissions, Deaths, and Fatality Rate from Diphtheria during the Past 30 Years.*

| Year. | Admis. | Deaths. | Fatality rate. | Year. | Admis. | Deaths | Fatality rate. |
|---|---|---|---|---|---|---|---|
| 1896 | 114 | 23 | 20·17 | 1911 | 295 | 52 | 17·62 |
| 1897 | 163 | 21 | 12·88 | 1912 | 291 | 35 | 12·03 |
| 1898 | 249 | 42 | 16·86 | 1913 | 333 | 24 | 7·20 |
| 1899 | 300 | 49 | 16·33 | 1914 | 380 | 43 | 11·31 |
| 1900 | 269 | 36 | 13·38 | 1915 | 403 | 60 | 14·88 |
| 1901 | 310 | 66 | 21·29 | 1916 | 533 | 64 | 12·00 |
| 1902 | 431 | 72 | 16·70 | 1917 | 559 | 67 | 11·98 |
| 1903 | 334 | 48 | 14·37 | 1918 | 464 | 70 | 15·08 |
| 1904 | 351 | 31 | 8·83 | 1919 | 601 | 57 | 9·48 |
| 1905 | 438 | 53 | 12·10 | 1920 | 700 | 62 | 8·20 |
| 1906 | 421 | 70 | 16·67 | 1921 | 560 | 32 | 5·71 |
| 1907 | 412 | 82 | 19·90 | 1922 | 611 | 40 | 6·54 |
| 1908 | 373 | 47 | 12·60 | 1923 | 671 | 23 | 3·42 |
| 1909 | 337 | 35 | 10·38 | 1924 | 713 | 27 | 3·78 |
| 1910 | 260 | 45 | 17·30 | 1925 | 719 | 18 | 2·50 |

Population served by the hospital: 1891, 201,905; 1901, 267,385; 1911, 289,030; 1921, 300,860; 1924, 317,400. The fatality rate is calculated per 100 admissions.

As regards dosage, up to the year 1914 the general routine dose was 2000–12,000 units, given by subcutaneous injection and repeated up to a maximum of about 40,000 for the most severe cases. In 1914 the intramuscular route was substituted for the subcutaneous, but the scale of dosage remained much about the same until 1920, when the disease increased in prevalence and severity and the maximum was increased to about 80,000 for the most severe cases. Since then our maximum has ranged from 70,000 to over 100,000 units, given partly by intravenous and partly by intramuscular injections. But during the past three years, as the type of disease became milder, our average dose diminished. In 1920–22 it worked out at about 28,000 units, but dropped in 1923 to 19,000 units. In 1924 it was 18,000 units and last year 15,000 units. At the beginning of last year our scale of dosage worked out at 9000 units for mild cases, 20,000 for the moderate, 40,000 for the severe, and 90,000 for the most severe. Last October we reduced this scale to 5000 units for the mild cases, 15,000 for the moderate, and 32,000 for the severe; but we made no change in our *maximum* for the most severe type. In comparing the results from 200 cases treated with each of these scales we found no appreciable difference in the mild type, but in the moderate and severe cases treated with the small scale the throat lesion did not clear up so rapidly, albuminuria was more common and persisted longer, and the paralysis rate was slightly increased. Our impression has been that the latter scale is the minimum that can be employed with safety.

### *Methods of Administration.*

The routes by which serum has been given have been by mouth and rectum, and by injections subcutaneously, intramuscularly, intravenously, intraperitoneally, and intrathecally. Administration by mouth and rectum has been shown to be practically valueless for therapeutic purposes and should not be employed.[3] Subcutaneous injection was the method most generally used in the early years of serum treatment and it still continues to be the common mode of administration. Its advantages are that it is safe and easy to perform. It has, however, one important disadvantage—namely, that the antitoxin is very slowly absorbed from the subcutaneous tissue.

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[3] Ker, C. B.: Infectious Diseases, 1920, p. 431.

[4] Thomson, F. H.: Diagnosis and Treatment of Infectious Diseases, 1924, p. 137.

[5] Madsen, Th.: Journal of State Medicine, March, 1923, p. 101.

Intramuscular injection was first employed in this country about the year 1914, and it has now largely superseded the subcutaneous route. Its great advantage over that route is that the antitoxin is absorbed much more rapidly from muscular than from subcutaneous tissue—a very important consideration in severe cases. When the injection is made on the outer side of the thigh, in its middle third, it is quite as easy to perform, quite as safe, and less painful than subcutaneous injection in the abdominal wall. I do not know of any reason why the subcutaneous route should still be employed in preference to the intramuscular. The injection is sometimes made into the gluteal region, but this is a bad site as it is very painful and uncomfortable for the patient, and the puncture wound is liable to be infected.

Intravenous injection has the advantage over the other two routes in that the full effect of the antitoxin is obtained almost immediately. Its disadvantages are that the injection is frequently followed by a severe reaction and that in young children it is sometimes difficult to get the needle into a vein. From my own experience of this method in severe cases I have been impressed by the rapidity with which the toxic symptoms have subsided and by the number of patients who escaped paralysis or only had it slightly. Though the reactions following the injections are sometimes severe, death has been rare and with some practice the injection is not very difficult even in young children. In very severe cases I think an intravenous injection of part of the serum at the outset improves the patient's chance of recovery.

I regret I have had no experience of intraperitoneal and intrathecal injections and can offer no criticism of these two routes.

Regarding the question whether the antitoxin should be given in a single or repeated doses the evidence appears to show that one should aim at giving at the outset of the disease all the antitoxin the patient is likely to require. It has been stated that an insufficient first dose cannot be wholly compensated for by later injections. Some authorities favour repeated injections, and in severe cases it is often difficult to estimate at the outset the exact amount of serum the patient is likely to need.

In recent years brands of highly concentrated sera have been obtainable on the market and it is claimed for these that owing to the small bulk a large amount of serum can be injected more easily and that serum sickness is less likely to be severe than with unconcentrated brands. A highly concentrated serum should be very convenient to the general practitioner, but there does not seem to me to be any necessity for using it in hospital practice. I have found no difference between concentrated and unconcentrated brands in the incidence of serum sickness, and on the whole I prefer the unconcentrated type.

With reinjection of patients who have previously had serum the incidence of anaphylaxis or severe serum sickness is so rare, particularly in children, that the fear of it occurring need not prevent a second injection if the patient requires it. And it also seems unnecessary to give a desensitising dose to children.

### *Conclusions.*

Experience has shown that the value of antitoxin as a specific cure for diphtheria is limited to the early days of the disease—i.e., to the first three or four days from the onset. In order to reduce the case-mortality the first essential is early diagnosis and treatment.

Extensive swabbing of all suspected throats cannot be recommended because it incurs delay and the results are not always reliable. Better results would be obtained if medical practitioners made it a routine habit to inject all suspicious cases with antitoxin at their first visit on the scale recommended by the Ministry of Health.

For the type of case which is virulent from the onset I recommend the administration of large doses of serum partly by intravenous and partly by intramuscular injection.

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# ON A METHOD OF CANCER RESEARCH.

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THE object of this article is to call attention to a method of research which has proved successful in the solution of some difficult problems of science and, for reasons which will presently be given, seems pre-eminently fitted for the solution of the cancer problem. It affords a strong contrast to methods of research now in vogue. These are inductive and seem to be based on the proposition that despite the possession of an enormous quantity of facts, the accumulation of centuries of observation and experience, we still lack the essential data. For these we search chiefly by experiments on lower animals in laboratories. The method now to be discussed is deductive. By it we assume that we already have facts enough and that we know the biological laws and the principles by means of which we can put them together in the right way in order to gain our end. The two methods are fundamentally different. By the former or inductive method the problem is approached as a locked-up mystery, a sort of Aladdin's cave, to be opened by means of a key, by some formula still to be found. By the deductive method, about to be described, it is regarded as a jig-saw puzzle on the grand scale, not to be solved until every part has been fitted together in its proper place.

Owing to the wonderful success of the experimental method when applied to other departments of medicine, induction is now so much more highly esteemed than deduction that there is reason to fear that its popularity is leading to its use in unsuitable cases. In reality each has its advantages and each should be regarded as complementary, not antagonistic, to the other. At no time has progress in knowledge been so rapid as when the one has gone hand in hand in friendly relations with the other, checking its exaggerations and correcting its mistakes. Hence the present dominance of experiment over experience, of laboratory work over general biological study, is matter for grave apprehension, and the time seems ripe for a general review of the situation and the trial of some wide method of deduction. That this is a reasonable attitude to adopt will, I think, be apparent when we consider the results of present inductive methods of cancer research.

### *Inductive Methods of Cancer Research.*

Search for the nature and cause of cancer has now been going on for well over 100 years. The first cancer research laboratory was established in London in 1802, and during the whole of the nineteenth century cancer was regarded as one of the great scientific problems which pressingly demanded solution. We have reached the poles, have solved the conundrum of flight, have discovered X rays and radium, the telegraph, telephone and wireless telegraphy. But while these and other difficulties of mechanics, exploration, physics, chemistry, transport have been born, have matured, have even become old and effete, that of cancer is still incubating. In our own line of work brilliant discoveries have been made in the domain of diseases due to microbial invasion; but cancer, which has received ten, twenty, even a hundred times more attention still defies all our efforts.

The history of cancer research is a record of gigantic labour, carried on by men of outstanding ability, at enormous expense to end in failure. We ask ourselves what are the causes of this want of success? Evidently it is not the result of any lack of effort or of competence. The more sure we are that the fault does not lie in this direction, the more likely is it that it is due to some mistake in our methods, some error of strategy? Let us now see in what this strategy consists.

At first cancer research was mainly *anatomical*. Cancers, both in the living and in the dead, were studied with great thoroughness, much to the improvement of classification, of diagnosis and of surgical treatment, but with very little result so far as an understanding of their nature and causes was concerned. A fresh impetus was given to this form of examination by the introduction of microscopy; but this extension of anatomy to the finer details of cancer structure, though carried to the point of exhaustion, has also turned out to be barren of the desired results. While searchers were still being exhorted to "think anatomically," fresh discoveries in bacteriology by Pasteur started a new and still more hopeful way of investigation. One after another disorders which had hitherto defied all attempts to understand them were now found to be due to invasions by minute forms of vegetable or animal life, and what could seem more likely than that cancer should be of the same category? But little, if any, progress having been made as the result of patient labour in this field of investigation, a third and still more hopeful way was opened by *biological* research. At the end of the last century the growth and behaviour of living cancers began to be studied in the bodies of lower animals. But, unfortunately, this new and encouraging departure is suffering from the prestige of morphology and bacteriology. As applied to cancer research biology is being mercilessly cramped by its association with these other two sciences in a sort of symbiotic trinity within the restricted and stuffy precincts of the laboratory. Nevertheless this third form of research, this offspring of the biologist and the bacteriologist, has already met with some success, though on a small scale, as befits its parentage. For whereas all the previous years of patient labour were barren as far as the main issue is concerned, out of the biological travail of this century has arisen a better knowledge of the living cancer as it occurs in rodents and fowls, and this seems a definite advance on the earlier knowledge of the forms and composition of dead cancers. Yet, as we look at the enormous growth of the cancer research movement and then at these results, we are inevitably reminded of the mountain in labour, for out of it has emerged a mouse bearing upon its back that strange burden, the neoplasm of Jensen. And it is upon this same mouse, this same *ridiculus mus*, that we are largely depending as the means by which the British lion is to be freed from the bonds of cancer.

However much this form of research may appeal to us, it is open to serious, even fatal, objections. If cancer is not the result of an invasion but is in truth a part of the animal it infests, it would evidently be very unsafe first to study the neoplasms of much lower forms of animal life and then to apply our inferences and theories to the neoplasms of human beings. By such study we may add to our knowledge of the growths of plants, of mice or of fowls, but not of men. It cannot too emphatically be asserted that, however ingenious the research made on these lines or shrewd the induction, no reliance can be placed upon it as an explanation of human cancer or of the causes of human cancer until it has been successfully applied to human beings.

The *conclusion* is that though greatly indebted to anatomy for our knowledge of the structure of cancer and for its bearings on treatment, it is of little use as a means of finding causes. Laboratory methods, again, though supremely useful in unravelling the tangled mysteries of the microbial disorders, are unfitted for cancer investigation. They are wrong in principle, seeing that there are cogent reasons for looking upon cancer as of internal origin and fundamentally different from the disorders due to microbial invasion.

### *Deductive Cancer Research: The Cartesian Method.*

We now turn to a form of deductive research advocated by Descartes some 300 years ago. As applied to the present problem it is based on the proposition that cancer of man is essentially an intrinsic disease, a piece of the man himself, and that for its solution we have all the data we require. According to this view the genesis of cancer is an affair of human genetics.

It was the opinion of Descartes that in the end all natural phenomena are mathematical and that provided the facts are sufficient and the laws understood it is possible by sheer calculation to solve any problem of nature or disease. It is in accordance with his system as described in his "Method of Rightly Conducting the Reason and Seeking Truth in the Sciences," that we need not wait until our knowledge of anything has become Euclidian before we begin our calculations. At no time is it more opportune than when a problem has resisted many years of inductive investigation and is buried under a vast mass of facts and theories. The method is, moreover, applicable to problems of disease. Descartes regarded it as eminently fitted for this purpose and thought there could be no higher task than to apply it to the advancement of medical research.

The Cartesian method was almost inevitably both analytic and synthetic, both destructive and constructive. Old, worn-out and dangerous methods and beliefs were of necessity broken down in order to make way for the foundations of a better structure. Its *destructive* or analytic effects were obvious. The wonderful advances in philosophy initiated by Plato and Aristotle which had done so much for the progress of knowledge and had inspired Galen had got into grooves. Science instead of going forward had lost its way and was moving in circles. Such non-progressive movements were not confined to theologists and philosophers, but flourished among the medical fraternity, who were entrenched behind centuries of tradition and were severely intolerant of those who would not adopt their own particular tread-mill methods of working.

It was one of the great merits of the Cartesian method that it tended to break down these time-honoured but costly and obstructive beliefs. Founded on doubt and with the single purpose of getting at the truth, it closely scrutinised even the most tenaciously held theories and practices. Authorities, vested interests, opinions, common beliefs were regarded as nought; nothing mattered except the truth. That a statement had behind it the weight of authority or of precedents was to Descartes the more reason for scepticism. By so winnowing the chaff from the wheat he did much to prepare the way for our present dependence upon rationalism and dislike of dogmatism; and also for the friendliness with which new ideas and new criticisms are now received even by conservative scientists.

So much for the *destructive* side of Cartesianism. The synthetic or *constructive* side was simplicity itself. In the investigation of any problem of natural science the Cartesian would study the laws and rules by which it is governed and regulated, comparing them with the facts and data. Though he proceeded mainly by deduction, his theories were never so much in advance of his facts as to lose sight of them, and sometimes it is a little difficult to say which were leading, the facts or the theories.

The method appeals not only by the force of its logic, but by its results, for it has often been applied with success. There can be no better example the successful use of the Cartesian method than discovery of the planet Neptune by A Leverrier. This represents the use of the its simplest form. So little had the telescope and sleepless nights of actual observation to do with this discovery that, according to Flammarion, Leverrier, 30 years afterwards, had not only never seen Neptune, but would not even trouble to put his eye to a telescope which was being directed to his planet. After the same fashion, to compare the very small with the very big, it is conceivable that an investigator working on the Cartesian plan might answer all the cardinal questions that may be asked about cancer without ever having seen a cancer. An inquiry into the causes and nature of cancer could be carried out by anyone who has the requisite data and sufficient acquaintance with the laws of life, especially with those which deal with origins and go by the name of genetics and with ecology or the science of relations. At the same time, so wide is the scope of such an inquiry that it will be to the advantage of the "researcher" that he should get all the information about the disease that he can. He should be familiar with cancers living in their natural surroundings, or, in other words, should himself be an operating surgeon. In addition, it will be so much the better if he has a private laboratory and the services of a competent assistant that he may know the structure of all sorts of cancers and precancers and allied diseases. To understand the wider aspects of the question at issue he should also have some knowledge of sociology. He should, in short, be a biologist in the largest sense of the word. Lastly, the "researcher," so equipped, and with all the resources of the best of museums and of medical libraries at his disposal, must be prepared to continue his inquiries until he has accomplished his task, although it may occupy his spare time for some 20 or more years.

### *The Results of a Deductive Cancer Research.*

The following is a brief account of some of the results of such a research, details of which have recently been published.[1] It would be impossible within the limits of this article to give even an outline of the many new interpretations of familiar facts of oncology which have thrust themselves forward and compelled attention. But two deserve special mention because of their importance and because they furnish excellent examples of the results of the method.

### *Nature of Cancer.*

1. The first interpretation is concerned with the great central problem of cancer—its ceaseless and useless proliferation. By the rational method of Descartes a simple and perfectly adequate answer is found already provided by biologists. Cancer as an intrinsic disorder has its source in the disturbance of some normal attribute of the body. By a process of analysis this is found to be *development.* Von Baer, Huxley, and Ray Lankester have shown that development is coterminous with life and has a progressive and a regressive or degenerative phase. There is first a rise from simplicity to complexity, then a fall from complexity to simplicity. Development, in other words, tends to assume a circular form. If we regard it from the standpoint of the individual it is circular; if from that of the race it is cyclical. In the latter event it marks a forward movement, fresh cycles being given off as the circle turns round. Modifications of this circle of development occur according to the unit of construction. Man as a whole, organs, cells, each has its own circle. The mechanism is one of lesser wheels and bigger wheels.

The development of *man,* as a whole, turns round in its course, so that in its regressive phase we can detect a debased repetition of the progressive phase. We all know the second childhood of man and some of us are familiar with his second infancy. Those who have carefully examined the tissues of old people also become acquainted with changes of an embryonoid character displayed more or less prominently in his various organs.

Then each *organ* lives its own life and provides its own circle, some circles being longer or bigger than others. These, too, begin in simplicity, become complex, and end in simplicity. Of the shorter or smaller circles the reproductive organs furnish the best known example.

Then come the *cells.* As a rule, the life-history of the cell is bound up with that of other cells in the organ to which they belong. But, as we all know, occasionally clusters of cells *qua* cells either fail to develop or run through their development too soon. Should they remain stagnant and unprogressive, one of several results may be expected: (1) The clump of cells will be absorbed. (2) It will resume its interrupted development and, if not too backward, will catch up with other cells to become a useful member of the cell community. (3) Or it will be so far behind as to remain permanently ill-developed and out of harmony with the surrounding cells. So truly may this be the case that to all intents it is a piece of tissue from an inferior animal. It will therefore be shut off or encysted. One of three things may happen to this incongruous patch: (*a*) it degenerates molecularly and is absorbed; (*b*) or it renews its progressive growth, but with a wrong chronology and with diminished restraint as a tumour; (*c*) or it enters upon its second childhood and then resumes an embryonoid character, proliferating after a debased fashion as a cancer. Cancers are, indeed, cells which have entered upon the degeneration of old age too soon and are being nourished by the juices and stimulated by the hormones of the younger, more vigorous tissues around them. They are often spoken of as embryonic, as if they were young cells. Cancer cells are not young or progressive, but are senile, regressive, decadent. They are embryonoid, not embryonic, and it is for this reason that they multiply so incessantly and so uselessly.

The importance of this cyclical theory of development in its bearings on pathology is difficult to exaggerate. With this in our minds we should be less inclined to confuse the granulomas or other progressive neoplasms of lower animals with the regressive neoplasms or cancers of man. The difficulties of distinguishing between progressive multiplication and regressive multiplication become greater as we descend in the scale of life, because the lower we go down the scale the smaller the developmental cycle; the more closely the embryonoid approximates to the embryonic. Indeed, in the case of certain neoplasms of plants the likeness to cancer cells may be so close that only the facts that these neoplasms favour young plants and that the plant has no true regressive phase comparable with that of a metazoan animal enable us to distinguish between them.

### *Causes of Cancer.*

2. The second outstanding feature of cancer is the manner in which cancers are brought into being. We all agree that the actual cause of cancer is to be traced to some outside source. This being the case, how can we reconcile this external cause with their internal status? By the Cartesian method we find the explanation in the action of *cancer-producing irritants.* The evidence is now overwhelming that for the production of cancer two factors are essential, the first factor being a passive predisposition possessed by some animals, men, organs, or cells to a higher degree than by others; the second factor a stimulant or irritant capable of rousing the cells into regressive activity. Translated into the language of biology these factors become "variability" on the one part and "suitable environment" on the other.

*The Irritant.*—It must now be our business to find how the passive predisposition or variability coöperates with the active irritant to start the cell multiplication which is cancer. Attention has often been called to the resemblance of the action of the irritant upon the susceptible cells to produce the proliferation of cancer, and the action of the male cell upon the female cell to produce the proliferation of the embryo.

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[1] *Tumors and Cancers: A Biological Study.* By Hastings Gilford. 1925.

That this comparison is just, reasonable, and sagacious is shown by the presence of a series of connecting links between the two forms of neoplasms—the embryo and the embryonoid—and between the stimuli by which they are actuated.

(1) Thus in the beginning of the cycle of normal development the proliferating cells which constitute the embryo are the result of the action of three forms of stimuli There is first the mechanical stimulus of the entrance of the active spermatocyte; then the chemical stimulus of its molecular disintegration, and, most potent of all, a third stimulus, an actinic stimulus, liberated when the one cell acts upon or even approaches the other cell.

(2) But in this act of embryo formation the presence of the sperm cell is by no means essential; for, at any rate in the lower animals, a complete series of progressive developmental changes can be set going by artificial stimuli, by mechanical stimuli alone, by chemical stimuli alone, by actinic stimuli alone

(3) In the next place strong circumstantial evidence has been brought forward by competent observers tending to indicate that similar parthenogenesis sometimes occurs in human beings, resulting in the formation of imperfect embryos in the ovaries of women or even in the testes of men. Such embryomas lie in the border region between normal embryos and tumours.

(4) The next step is across this border The embryonic or undeveloped cells which constitute Cohnheim's cell rests in some ways resemble the reproductive cells in the ovary They are undeveloped, are clusters of cells set apart from the somatic cells in general, are more susceptible than *normal* cells to the action of mechanical, chemical, or actinic stimuli, and under the influence of such stimuli are capable of growing rapidly in a progressive if abnormal manner as tumours or regressively as cancers.

(5) The last stage of these gradations is reached when we come to those collections of primitive-looking cells which *form* pre-senile adenomas or papillomas, such as those which occur in the degenerating female breast. These are groups of cells which have *completed* their cycle of development before their time and have arrived at a stage of regressive simplicity comparable to that of the progressive simplicity from which they started. They have reverted to a form and function almost on a level with those of the amœba or of the oocyte; and, like all primitive cells, their faculty of reproduction stands out conspicuously as compared with other faculties. All that is necessary *for this reproduction* to assert itself is the action of an appropriate stimulus in an appropriate strength. Such a stimulus is supplied by trauma or other mechanical agent, by the toxins of some bacterial infection or other chemical agent, by X rays or other actinic agent.

Hence the self same forms of stimuli, which act at one end of the developmental cycle to start a proliferation of progressive type ending in the formation of the normal human embryo, are capable of acting at the other end of the cycle to produce the embryoma like proliferation of regressive type we term cancer Embryos are the tumours of the beginning of development cancers are the embryomas of the end of development

It is important to realise that though cancer is the parthenogenetic conception or offspring of aged tissues, it is the child of premature, not of *normal* senescence In normal senescence the changes of regression are accomplished so quietly, so unostentatiously, that nothing happens except the gradual substitution of a low order of (connective) tissue for a higher The weeds begin to flourish as the soil is exhausted and the crops fail But when local senility sets in before its time and the degenerated cells are aroused into reproductive activity by the violent and repeated action of some appropriate stimulus, it is but to be expected that the resultant growth will be regressive, *disorderly*, and excessive And once this embryonoid activity is set going, the comparative youth of the body at large will ensure that it does not fail from lack of support. Nutrients reach it through the blood and lymph streams as well as stimulants from the various endocrine organs. Hence the more youthful or sanguine or vigorous the body as a whole, the more malignant the cancer, and the more aged or shrivelled the body, the slower the growth of the cancer and the more likely to come to a stop

### *The Predispositions*

The active stimuli which incite to cancer are not to be compared in importance with the passive element which constitutes the predisposition to cancer These more subtle causes are intimately connected with the degenerative circumstances of our time. Cancer, as a degeneration, arising in circumstances of degeneration, *springs from causes so widespread that* we are able clearly to trace their influence in the changing customs of civilisation. Everything which promotes degeneration in general is potentially a predisponent to cancer If civilisation prolongs life into its senile states, it is a cause of cancer, if it keeps alive the inferior C3 quality of the nation and enables its degenerate members to grow up and multiply, it promotes mental and bodily *deterioration*, including cancer The study of the laws and regulations of biology has given us the assurance that in all living creatures in a state of nature there is a process of elimination at work by means of which the progressive qualities tend automatically to survive and the lower, baser qualities to succumb Cancer and other degenerative diseases are therefore scarce In wild life good ultimately rises to the *surface* and *bad* falls as a sediment to the bottom If we deliberately preserve the bad and cultivate a bad stock, while *we waste and discourage* and eliminate the good, using its superior qualities for the preservation and increase of the bad, we commit a mortal sin against nature by ensuring not the survival of the fit, but of *the unfit By this* means decadence prevails and an atmosphere is created congenial to mental and physical deterioration and to the various degenerative diseases.

Inadequate use of highly important organs, such as the reproductive organs *of women* or the digestive organs of both sexes, must also be regarded as a source of weakness and degeneracy and as rendering *those organs vulnerable* to cancer-producing agents.

### *Conclusions*

It is hoped that the rough and inadequate sketch which has now been given of some results of the Cartesian method of research as applied to cancer may convey some idea of its value and may induce others to pursue the same method of investigation. It will be seen that it *may correctly* be termed the method of the jig saw puzzle, for by it evidence is collected from all sources to be classified and arranged in accordance with *biological* laws Certain facts are correlated and made to dovetail in with other series of facts Gradually definite patterns begin to emerge out of the original chaos until at last the worker sees before him the whole picture clearly revealed

This solution, again, is not partial *nor indefinite*, but is a full and satisfactory reply to each and all of the six cardinal questions which must be answered before we can say we understand the nature and cause of anything In its complete form it tells us *when* cancer begins; *whence* or in what circumstances it arises, *where* it is placed These we know already, but by the Cartesian method we are enabled also to answer the far more important questions, *what cancer is*; *how* it begins; *why* we are afflicted with it. These answers, moreover, are not merely dialectical and superficial, each remaining in its *own pigeon hole* as a self-contained theory, but are interdependent, bound together in one fascia by the rational method of Descartes.

Cancer we see as a cluster of cells which, owing to over-stimulation and to more diffuse degenerating influences, are *finishing their* circle of development too soon Structure and function now approach their original simplicity and the faculty of reproduction, the most primitive of functions, released from all inhibitions, comes to the fore. Under the fertilising influence of one or more of the reproductive stimuli—actinic, chemic, mechanic—these cells burst forth into an embryonoid or amœboid reproductive activity and find their way along the lines of least resistance to all parts of the body.

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# TUBERCULOUS ADENITIS TREATED BY RADIUM.

## A SERIES OF FIFTY CASES.

BY PHILIP GOSSE, M.D. DURH.,
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ALTHOUGH radium as a therapeutic agent is generally associated with the treatment of cancer, it can be of great use in the treatment of several forms of non-malignant disease. One of these—tuberculous disease of the lymphatic glands—responds very satisfactorily to irradiation with radium plates, and the following series of 50 cases treated at the Radium Institute, London, appears to be worthy of analysis and record.

From a study of the notes of these cases certain facts emerge. In many instances there was but little benefit noticed after the first application of radium, but definite improvement became apparent after the second. Various forms of screening and different lengths of application were tried in the early stages, but it was soon observed that the best effects were to be expected when the treatment was carried out in a long exposure with heavily screened apparatus, given during a 48 hours' stay as an in-patient, although good results were obtained when the patient was treated as an out-patient, with three or four daily sittings of six hours' each, making a total of 18 or 24 hours' exposure. If after a long exposure a second treatment were given, an interval of at least six weeks should be allowed to elapse between the two exposures to radium.

### *Selection of Cases and Diagnosis.*

The cases reported upon here were of all ages, from a few months to comparatively old age. The cases of children did best, but improvement is to be looked for at any age. Those patients who had received previous X ray treatment did not respond to radium so quickly as those who had not.

In most of these cases the question of the removal of the glands by operation had been discussed; and the various reasons for negativing surgical means were as follows: (1) The general physical condition of the patient. (2) Previous operation had been performed but disease had recurred. (3) The objection on the part of the patient, or the parents, to what they believe to be the danger of the operation, but much more commonly to the fear of disfiguring scars remaining in the child's neck afterwards. (4) In the more recent cases the doctor in charge of the case, having had good results in previous cases with radium, preferred to resort to that line of treatment from the first. (5) The operation for removal of tuberculous glands by surgery is now but seldom done.

Every doctor who has sent a case of tuberculous adenitis to be treated here has been written to, and asked for information as to the present condition of his patient, and whenever possible the patient has been re-examined at the Institute. In not a few of these cases which had been previously operated upon, besides the enlargement of the glands, disfigurement and even deformity were present, owing to keloidal changes in the scars. It is satisfactory to note that the same radium application given for the glands will at the same time reduce these keloid scars. When a patient comes for radium treatment, and on examination a swelling is found which contains fluid, this is first removed by aspiration. In those cases where there is a sinus leading down to one or more broken-down, discharging glands, treatment by radium is by no means contra-indicated. In fact, in most of the cases of this kind treated by radium the sinus has rapidly dried up and closed.

Although the diagnosis of tuberculous adenitis was made in a few cases from microscopical examination of gland tissue removed by operation, in most of them the diagnosis was arrived at by the clinical history and physical examination. It is to be noted that where a mass of glands diagnosed as tuberculous suddenly and almost completely disappears within a week or ten days of the first radium application, the case is probably not tuberculous, but proves later on to be lymphadenoma.

It is interesting in going over the notes of these cases to observe how on not a few occasions enlargement of the glands of the neck was first noticed some few weeks after the tonsils had been surgically removed. What the significance of this is, whether merely coincidence, or whether, owing to the removal of the tonsil, bovine tubercle bacilli have gained access through the bed of the tonsil, it is difficult to say, nor is it strictly concerned with the subject under discussion.

### *Technique and Results.*

The technique itself is simple. The glands to be treated, having been carefully located and palpated, are marked out on the overlying skin with a dermographic pencil. Over these localities "half-strength" plates—i.e., plates covered by 2·5 mg. radium element to each 1 sq. cm. surface, and covered by a sheet of Monel metal 0·3 mm. in thickness and screened with silver 1 mm. in thickness—are applied, and held in place by pieces of adhesive plaster. Over these a few turns of crepe bandage are placed. This causes no discomfort to the patient, but where the patient is remaining in the Institute for two days and two nights, the plates are removed occasionally for a few hours.

Of the cases of tuberculous adenitis treated at the Institute I have taken 50 consecutive ones, which show the following results: cured, 37; improved, 9; not improved, 3; dead, 1; total, 50; and these statistics give a very good idea of the results to be expected by treating with radium. The cases reported "cured" represent those in which the patient enjoys perfect health in every way, and has no glands that can be palpated, or at most merely small shotty hard bodies, consisting of fibroid tissue only.

Of the three cases which did not improve, in one the doctor in charge of the patient wrote to say that a week after the child returned to his home after radium treatment the glands swelled up and had to be operated upon, and a quantity of pus was evacuated. Another case, a male, aged 24, died of phthisis three years after the treatment. Such a rare termination of a case of tuberculous glands is worth while recording. In his letter the doctor stated that after the radium treatment the glands entirely disappeared and never returned.

### *Histology.*

The action of the radium on the tuberculous glands has kindly been described for this article by my colleague, Dr. J. C. Mottram, who writes as follows: "The cellular changes which follow the irradiation of tuberculous lymphatic glands finally result in fibrosis. There is an early disappearance of lymphocytes, which either disintegrate or are phagocytosed by macrophages. The lymphoid myeloblasts, except after large doses of radiation, do not perish, and later may re-form lymphocytes. The lymphoid follicles atrophy, only the central cells remain. The endothelial mesh-work of the gland remains little altered, except for a great increase of fibrous tissue, so that the whole gland, shrunken from the loss of lymphocytes and other cells, comes to consist of narrow spaces lined by endothelial cells running through thick fibrous tissue. In this tissue the tubercles persist, more especially the giant cells, and here tubercle bacilli have been found persisting many months after radiation. It has been concluded from these appearances that the good clinical results are due to the creation of a site unfavourable to the growth of the tubercle bacillus, rather than to any direct action of the radiation on the bacillus. The dose of radiation given is always very much less than the lethal dose for the bacillus; nevertheless, a direct action on the bacillus may also be a factor, for the reason that it is well known that sublethal doses of radiation effect a lowering of the virulence of bacilli."

I am indebted to the many medical practitioners who have written to me in reply to my inquiries about their cases treated at the Institute, and my thanks are also due to Mr. A. E. Hayward Pinch for much helpful advice.

# Clinical and Laboratory Notes.

## A CASE OF INTUSSUSCEPTION PRESENTING UNUSUAL FEATURES.

BY D. S. FAIRWEATHER, M.B., CH.B. EDIN.,

SENIOR HOUSE SURGEON, BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY.

THE following case presents several features of interest.

H. W., a boy of 14, was taken ill suddenly on the morning of Nov. 28th, 1925, with collicky pain across the umbilical region. He vomited a little later, and before admission vomited everything he ate. On the 29th he had diarrhœa, which continued until admission. He stated that no blood was passed per rectum. The pain recurred spasmodically and seemed to spread all over the abdomen. He is said to have swallowed a pin two years ago. Previous health good. The patient has six brothers and two sisters, all healthy.

*Condition on Admission.*—He was admitted to the infirmary on Dec. 3rd; temperature 100° F., pulse-rate 110, respiration-rate 26. He did not complain of much pain, but looked ill. The abdomen was slightly distended, although there was no visible peristalsis. Generalised abdominal tenderness was present, which seemed more marked in the right iliac fossa. Rigidity was not marked, though definite resistance was made to palpation. A rectal examination was made and a mass situated in the pelvis palpated. The mass seemed to lie slightly more to the left and was very tender. There was no blood on the palpating finger. A diagnosis of abscess from a pelvic appendicitis was made and an operation performed immediately.

*Operation.*—A right paramedial incision was made. Coils of small intestine were found to be distended, and a mass lying in the pelvis was brought to the operation wound. It was an intussusception involving about 18 inches of small intestine. Attempt at reduction was immediately followed by splitting of the serous coat of bowel and very little of the intestine could be freed. The affected loop was therefore excised and a lateral anastomosis performed. A small drain was inserted as there had been some slight leakage of intestinal contents and the abdomen was closed.

*Pathology.*—The specimen was examined subsequently and the entering and receiving loops found to be gangrenous in places. No pathological condition could be found to account for the production of the intussusception, although no definite attempt was made to find whether the swallowed pin could have accounted for the condition, as this fact was not disclosed until three weeks afterwards.

*Progress and After-treatment.*—The patient was given frequent salines subcutaneously, and on the second day following the operation the drain was removed, a little blood-stained discharge persisting for two or three days. His temperature reached 101·2° on the second day after operation, but soon dropped to 99°, and did not again rise. The bowels moved twice on the fourth day after operation without aperient, and have done so normally since. He was discharged on Jan. 4th, 1926, in perfect health.

Unusual features in the case are: (1) the age of the patient; (2) the alleged absence of blood in the fæces; (3) the rather unusual site of the intussusception; (4) the almost uneventful recovery after such an extensive operation and on a patient who had suffered five days before operation.

My thanks are due to Dr. W. Cran Duthie, honorary surgeon to the Blackburn Royal Infirmary, for permission to publish this case.

## SKIN-GRAFTING IN ACUTE SYMBLEPHARON.

BY JAMES MOORES BALL, M.D. UNIV. OF IOWA,

MEMBER OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE writer is not aware that the method described in this paper has been used previously in the treatment of acute symblepharon; yet, it would be most strange if it had not been employed. In the hope that this note will elicit information on the subject, it is put on record.

Extensive burns by lime rarely come under my observation. A few months ago, however, a young man was brought to me, who, five days previously, had had both eyes sprayed with lime, cement, and débris from a hose, into one end of which he had looked, and which he was about to use in washing his automobile. Unknown to him, the hose had been used by men working with lime and gravel.

The right eye presented numerous adhesions between the eyelids and the eyeball. Fortunately, the cornea was clear, and daily separation of the involved structures has left an eye with vision better than 20/16.

The left eye was very different. Here were extensive adhesions, and a cornea so thoroughly cooked that it resembled porcelain. What was to be done in the attempt to save a sightless globe with normal movements? Evidently the logical procedure would be to separate the adhesions and prevent their re-formation by means of Thiersch grafts. Under general anæsthesia adhesions were severed, dissection was carried to and slightly beyond the extent of the normal fornices, and re-attachment was prevented by anchoring grafts between the eyelids and the eyeball. A huge graft was sewed into the upper fornix. The lower fornix presented a more difficult problem. Here a silver plate (provided with several openings at each end), of the approximate length and depth of the inner surface of the lower lid, was used. A large graft was spread over and was sewed to the plate. The plate, thus covered, was then placed with its lower edge about 2 mm. below the lower boundary of the fornix, and was anchored to the eyelid.

The end justified the means so far as concerns the separation of the lids from the globe. In a short time the globe became soft and distorted, and showed signs of impending perforation of the cornea. At the end of four weeks the eyeball was enucleated. The attempt to save the globe was a failure; but, on the other hand, the patient has an ample space for a prosthesis. He wears a too-large eye at night, to prevent contraction of the tissues; and a smaller, cosmetic, one by day.

St. Louis, Missouri.

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PROGRESS OF SHROPSHIRE HOSPITAL.—Extensions now being carried out at the Eye, Ear and Throat Hospital for Shropshire and Wales include a new out-patient department and a new ward and dormitories for the nurses and staff. In response to a call for 1,000,000 shillings £10,000 have already been received, and of this the hospital's share is £7050. During 1925 4463 patients were treated, and still there is a waiting-list of 200.

# Medical Societies.

## MANCHESTER MEDICAL SOCIETY.

AT a meeting of this Society held on March 31st Prof. A. H. BURGESS, the President, took the chair, and Dr. T. A. GOODFELLOW opened a discussion on

### *Rickets.*

The discovery of the accessory food factors by Gowland Hopkins in 1912 was, he said, the starting point of the intensive research of recent years. Various ætiological theories had been from time to time suggested. At present these were concerned chiefly with hygienic causes and dietetic causes; the importance of the former was stressed by the Glasgow School and this view claimed support from the work of Margaret Ferguson under the Medical Research Council. The more recent work—especially that of the Mellanby's, of the British research workers in Vienna, published in 1923, and of many observers who had been noting the effects of the ultra-violet rays upon animals and foodstuffs as well as on rickety children—has considerably narrowed the field for discussion. The majority of observers now agreed with Mellanby that the three essential factors in the ætiology of the disease were: (1) an organic factor in the diet which is concerned in the calcification of bone; (2) light, either direct sunlight or radiations from the mercury-vapour quartz lamp; (3) an adequate amount and correct balance in the diet of the salts of calcium and phosphorus.

Dr. CATHERINE CHISHOLM dealt with the manifestation of rickets in the first two years of child life. She drew attention to the frequency with which child after child in one family contracted rickets, the incidence being out of all proportion to that of a family of neighbours living under similar conditions. Attention should therefore be paid to familial tendency. Personal idiosyncrasy, as shown by one twin taking rickets when housed and fed like its brother, has also to be considered as a factor. The weaning time of 200 cases of rickets entering hospital at varying ages showed a predominately large number of cases weaned in the first two months. Investigations were made on 75 children in Manchester and it was found that of these infants a certain number were weaned before the age of two months. Seventy-five per cent. of these early-weaned cases developed rickets, though the incidence of rickets in the 75 children under observation was 26·6 per cent.

Whether rickets was primarily (*a*) a disease of bone, or (*b*) the defect was merely one symptom of an entity, rickets, or (*c*) the rickety condition was merely a symptom or sequela of wasting diseases, at all events, said Dr. Chisholm, the bone change was the main feature of the condition found. A combined radiological and clinical examination was therefore necessary in diagnosis. The classical clinical symptoms alone could not be depended on. Two types of rickets were well described by Wimberger. Clinically, it was easy to under-estimate the amount of bone change in mild cases of the first or florid type, and radiologically in the second or passive type. As to the general incidence of rickets in the population, Thomson, of Edinburgh, stated that between 1895–1900 over 50 per cent. of the children under 3 years of age attending the Hospital for Sick Children showed unmistakable signs. Dr. D. H. Paterson had found 1·2 per cent. of active rickets in London in April, 1925; 32 per cent. had had rickets. Dr. Helen Mackay, in a different investigation, had found at least 8 per cent., but nearly all of them were slight cases. In an examination of 75 cases of unselected Manchester children who had never attended infant welfare centres, 26 per cent. of active rickets was found, of which two-thirds were well-marked cases. At least 46 per cent. radiologically showed suspicion of having had rickets. Of Dr. Paterson's London cases 92 per cent. were taking oil regularly. Of the Manchester district cases only five children—i.e., 6 per cent.—were having oil.

The treatment of rickets was obviously to supply the chemical constituents needed, in the form, or with the medium, which helped in their absorption, and under conditions which used them to the best advantage. Various attempts had been made to irradiate food lacking in vitamins or to isolate the vitamin factor and add to the diet. At the Babies' Hospital infants had been radiologically examined and watched on different lines of treatment. Unfortunately, it was impossible to deal with infants as laboratory animals, and intercurrent troubles were always arising to confuse the experiments. But the apparent results at present were:—

1. With a well-balanced diet alone, rickets may be healed even when advanced; but this takes a long time, during which the infant must be given exercise, but prevented from putting weight on his weak limbs. The healing is irregular as well as slow and shows relapses.

2. Massage in addition is not of much value in the actual healing of rickets where bone lesions are marked. The muscles may improve, the child may learn to walk, and progress may apparently be satisfactory, but the bones only heal slowly.

3. Cod-liver oil is the most dependable single agent for cure and in combination with Parrish's food is a reliable mode of regularly healing rickets.

4. Mercury-vapour light certainly helps to cure, particularly in the lethargic type with flabby musculature or the small atrophic type. Both types of infant seem to be stimulated by the rays and respond well.

The use of cod-liver oil with ultra-violet rays, said Dr. Chisholm, was an excellent and quick combination. A combination of food, massage, light, and oil certainly produced the quickest and best results in the cases selected in the autumn of 1925. Best of all, however, was cod-liver oil and natural sunlight, even in Manchester, when the summer was good, and when the infants were properly fed and clothed, and exposed under suitable conditions.

Mr. HARRY PLATT said that to the surgical mind rickets essentially presented a problem in the prevention and cure of deformity. Many of the efficient measures used to-day in the treatment of rickety deformities had undergone little modification since their introduction many years ago. At the present time operative intervention in rickets was being placed on a sounder basis. A deformity corrected in the stage of florid rickets was always likely to recur, so that some criterion of the activity of the disease was needed. This had now been provided as a result of a study of radiograms of the epiphyses in the various stages. In the infant the radiological index of activity had been completely established, but it was not so definite in the older child or adolescent. A more careful clinical examination of patients presenting the syndrome of late rickets had revealed the occasional occurrence of so-called renal rickets, in which the operative correction of deformities was always followed by disaster. Such experience emphasised the importance of a careful examination of the urine, and an estimation of the kidney function.

Rachitic deformities which called for the attention of the surgeon usually affected the lower limbs, and of these there were three main types—bow-legs, knock-knee, and coxa vara.

*Bow-legs* was essentially a deformity which showed a tendency to spontaneous rectification and it was rarely necessary to employ any special measures, and still less necessary to operate. For the extreme degrees of deformity in older children, tibial, or more rarely, femoral osteotomy was occasionally needed. Manual osteoclasis was possible when the bones were soft, but at this stage spontaneous cure could be expected in the majority of cases. Anterior bowing of the tibia was a deformity often best left alone. Its correction by operation in the extreme cases was not easy.

*Knock-knee*, in contra-distinction to bow-legs, was usually a progressive deformity and, once initiated, tended to increase long after rickets had healed. As it was determined chiefly by weight bearing, in the early stage this should be prohibited wherever possible. Under the exceptional conditions of an open-air hospital, moderate degrees of rachitic knock-knee would disappear without any form of splinting. In ordinary hospital out-patient practice it was usual to apply a corrective walking appliance, the best form being the classical knock-knee brace of Thomas. A great many cases of knock-knee in older children, however, came for operative correction, and on the whole the results of femoral osteotomy were exceedingly good, provided the after-treatment was adequate. In younger patients, after femoral osteotomy, the limb could be treated by immediate fixation in a plaster-of-Paris spica. In the adolescent and young adult it was desirable, however, to employ traction on a Thomas splint for as long a period as possible. This minimised the angulation and overlapping of the fragments and helped to ensure rapid union. Re-fracture after a femoral osteotomy was not an uncommon experience. In the older patients it was sometimes difficult to reproduce the full mobility of the knee-joint in a short time.

*Rachitic coxa vara* could be almost ignored, as it was chiefly a deformity appreciable only in radiograms. It had long been recognised that it invariably underwent spontaneous cure. Deformities of the upper limb possessed little surgical interest. Deformities of the chest were important, and once fully developed could rarely be corrected, although general benefit was gained from regular gymnastic exercises. In the production of spinal deformities rickets was a subsidiary or negligible factor.

Dr. G. V. Ashcroft read a paper on

### *Renal Rickets*,

in which he presented the results of an inquiry made at Ancoats Hospital into the association of rickets with renal disease. One typical case was described in detail with results of urea tests. In renal rickets, he said, the clinical picture was one of the onset at puberty of deformities of the late rickets type, associated with a profound muscular asthenia, pallor, stunting without infantilism, urine of low specific gravity, pale in colour and containing albumin, a notable absence of œdema and cardiovascular change, a negative Wassermann, a negative Loewi, and a negative Goetsch test. The X ray picture was one of rarefaction and metaphysical abnormality, hazy porosis, enlargement and lack of cortex, associated with some rachitic changes at the epiphysial line. Post-mortem examination showed chronic interstitial nephritis associated with fibrosis of the suprarenal gland and an inactive thyroid gland. The degree of renal involvement was roughly parallel to the degree of clinical and X ray abnormality. It was to the association of the typical clinical picture, the typical X ray picture, and deficient renal function that the term renal rickets had been applied. Dr. Ashcroft laid emphasis on the risk of uræmia following operation and the poor result obtained by osteotomy in such cases. In view of the frequency of the condition and the ease with which it might be overlooked, it was suggested that before an adolescent with bone deformity came to operation renal function tests should be carried out. Of the 24 adolescents with rickets investigated, 33 per cent. revealed definite renal inefficiency and 51 per cent. revealed some renal defect. Sufficient evidence had been found to warrant the suggestion that while the kidney lesion was responsible for certain of the findings, such as albuminuria and death from uræmia, the greater part of the condition might be due to fibrosis of the suprarenal gland.

## LIVERPOOL MEDICAL INSTITUTION.

At a pathological meeting held on March 25th Dr. J. C. M. Given, the President, took the chair, and Mr. D. R. Owen read a paper on

### *Acute Phlegmonous Gastritis*

in which he described two cases recently seen at the David Lewis Northern Hospital within a few weeks of each other.

1. A female, aged 60, who gave a long history of indigestion, was admitted and operated upon for perforated ulcer. The true condition was diagnosed at operation, and an anterior gastro-enterostomy was performed with a view to draining the stomach; abdominal drainage was also provided. She died, and the diagnosis was confirmed at the autopsy 24 hours after operation.

2. A man, sent in with the diagnosis of perforated ulcer, was operated on as an "acute abdomen," the signs not being typical of perforation. The condition was recognised at operation, and as there was pus in the pelvis all that was done was to place a drainage-tube in the recto-vesical pouch. The abdomen was then closed.

At autopsy a similar condition was found in each case. The stomach was greatly thickened and showed signs of acute inflammation; its cut walls oozed pus. There was an acute cellulitis of the stomach in each case, although there was no sign of recent ulceration, and no cause of the cellulitis was found. In the first case bacteriological examination was not made, but in the second a mixed infection of *B. coli* and streptococci was found.

One point which Mr. Owen wished to bring out, he said, was the presence in these cases of a stomach dullness area, not previously described, such as might be expected considering the pathological findings.

After describing the recognised localised and diffuse types of the disease and showing that his cases belonged to the latter—the so-called idiopathic or primary phlegmon of the stomach—he suggested that some of Alexis Thomson's cases of fibromatosis of the stomach might have been cases of cured phlegmon of the stomach. The ideal treatment, he said, was gastrectomy, but at the time when they were seen these patients would not stand such an operation. He therefore advocated the application of general surgical principles, when the condition was recognised after mid-line or right abdominal section, which would be the usual operation performed. The two essentials were to feed the patient and to deal with a cellulitis. He was therefore in favour of a jejunostomy through a new incision to the left—in order to feed the patient and to relieve any distension which might occur—then opening the stomach and incising its thick walls to let out the pus. Before opening the stomach it should be fixed to the abdominal wall to prevent infection of the peritoneal cavity. In this situation it could be treated as any other cellulitis would be treated. If serious hæmorrhage were feared the main vessels of the stomach could be secured before making incisions into its walls. In favour of this he argued that further operation would almost certainly be necessary if the patient recovered for removal of adhesions or of a fibrotic stomach, and therefore the cutting off of the gastric blood-supply would not be of great danger. As in the past, only one or two cases had been known to recover; he thought that new, even if heroic, measures were needed.

## NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

At a meeting of this Society held on March 31st Mr. H. Bell Tawse, the President, took the chair, and Mr. Victor Bonney read a paper on the

### *Causes of Sterility and their Treatment.*

Speaking of sterility generally, he said, there were certain factors which could not be accurately assessed and certain others which could. Prof. Arthur Robinson had shown that in animals—and probably also in human beings—there was a wastage of 40 or 50 per cent. of the ova shed by the ovary in circumstances favourable for fertilisation. This wastage was brought about in several ways. Some ova never reached the tubes, but were lost in the peritoneal cavity; others, though they reached the tubes, did not blend with a sperm, though sperms were there; others again, though blending with the sperm, perished within a few days of the union, apparently owing to an inherent deficiency of vitality. There were at present no means of diagnosing such happenings in the case of a sterile woman, nor indeed of being sure whether she ever passed fertilisable egg-cells out of her ovary. The factors which could be assessed were the patency of the genital canal from top to bottom, the healthiness of the sperm, its deposition in the vagina, and its ascent therefrom. Patency of the female genital canal was essential, and the recent introduction of tubal inflation had greatly extended our diagnostic capabilities in this respect. Every woman examined under an anæsthetic to find the cause of her sterility should have her tubes inflated, and if they were found blocked the best course in most cases was to open the abdomen at once and attempt to overcome the obstruction. The attempt was often successful, the most favourable cases being those in which the abdominal ostia alone were closed as the result of pre-existent inflammation. Absolute blockage in the uterine and vaginal segments of the canal was rare, but stenoses were not uncommon in the cervix and at the vaginal orifice; good results often followed operative dilatation of the cervix.

The upper two segments of the genital canal, said Mr. Bonney, were the follicle itself and the space between it and the abdominal ostium, this latter being the peritoneal segment of the canal. Obstructions could occur from non-dehiscence of the follicle or from the intervention of omental or other adhesions in the peritoneal segment. Non-dehiscence of the follicle did not lend itself to treatment, but obstruction between the follicle and the abdominal ostium might be cleared away. Much could be done by conservative surgery on the uterus, the tubes, and the ovaries to preserve the existing chances of pregnancy or to make pregnancy possible when hitherto it had been impossible. Emphasising the propriety of examining the man as well as the woman, Mr. Bonney spoke of the phenomenon of profluvium seminis and of the possibility of the sperms being killed by the vaginal discharge. Nothing much of scientific value was known about this last; the subject needed investigation, but it was difficult to get anyone to undertake it. As regards artificial insemination, his own experience had been uniformly disappointing, but where, on account of physical deformity, the sperm could not be deposited in the upper vagina it was the logical treatment.

The address was discussed by the PRESIDENT, Dr. J. C. BUCKLEY, Dr. G. E. J. A. ROBINSON, Dr. J. WATSON, Dr. W. R. SMITH, Dr. C. D. LOCHRANE, and Dr. C. H. ALLEN.

# Reviews and Notices of Books.

## STATISTICAL METHODS.

*Statistical Methods for Research Workers.* By R. A. FISHER, M.A., Fellow of Gonville and Caius College, Cambridge; Chief Statistician, Rothamsted Experiment Station. Biological Monographs and Manuals. No. III. General Editors: F. A. E. CREW, Edinburgh; D. WARD CUTLER, Rothamsted. Edinburgh: Oliver and Boyd. 1925. Pp. 239. 15*s.*

THE ideal position for a research worker to aim at is to be as independent as possible of statistical methods—to be able, that is, so to arrange his experiments as to allow one condition, and one only, to vary at a time, and thus to get a direct answer to a direct question, unclouded by the variation of disturbing factors irrelevant to the point at issue. In no field of research are workers wholly in this happy case—least of all in medical science. This is obvious enough in its final application, dealing as it does with man himself with whom experiment is clearly restricted. Here to a large extent the observational method must be used, disturbing conditions are partly out of control, it is not always possible to repeat an experience, and at times the whole staging of the experiment is, perforce, in the hands of Nature. Between pure observation and the ideal experiment lies a very wide field of research work which is more or less closely dependent on accurate statistical treatment as it approaches one limit or the other. Prof. Topley's recent Milroy lectures, lately reproduced in these pages, illustrate one branch of medical research—that of epidemiology—in which even in its experimental form the methods of the statistician are indispensable.

The research worker who is led by the title of Mr. Fisher's monograph to expect a comprehensive survey of statistical methods will be demanding more from the book than it offers. The clue to its content is found in the editors' preface, which states that one of the objects of this series is to give those who have contributed notably to the development of a particular field of inquiry the opportunity of presenting the results of their researches in a more extended form. This work deals chiefly with the large number of statistical problems which confront the laboratory worker who is obliged to deal with comparatively small samples. It is described by the author as an elementary book, is without mathematical proofs, and is designed for readers without special mathematical training; thus it is out of the ordinary run of statistical text-books—above them in many respects, in others below them. It is above them in so far as Mr. Fisher is an expert and original mathematical statistician, and the book is based largely on his own work in adapting suitable methods to the practical problems in view. The methods explained are illustrated by numerical examples, well chosen as typical of those which continually arise in practice. The numerical tables given are put in a simple form for practical use, so that tests can be made without the evaluation of complicated algebraic expressions. The faults of the book are such as arise from Mr. Fisher's talents. He has not always wholly succeeded in putting himself in the place of his less accomplished reader and realising his difficulties, though on the whole this work shows in that respect a great advance from the somewhat obscure style in which Mr. Fisher's purely mathematical works are written. No indication is given to the beginner as to which of the methods described are generally accepted, and which are based on convictions which are still a matter of controversy between Mr. Fisher and other statisticians of equal eminence. A certain lack of historical sense is shown by the rather inadequate acknowledgment of the work done by earlier writers. Perhaps Mr. Fisher owes more than he realises to the "traditional machinery of statistical processes" of which he speaks so scornfully, and not least to the extension of that machinery by Prof. Karl Pearson. One or two minor defects may be noted. The first example, which is designed to illustrate a method of calculation, is obscured by the introduction of technical terms which will be unfamiliar to many readers. It is definitely outside the scope of the work to give proofs of the methods described, but references in the text to the bibliography would help many who are not content to take everything on trust, and wish to know where the proofs may be found.

The ground covered is well suited to the needs of the practical worker. The introduction contrasts the aims of modern statisticians and those of their predecessors. The older workers were chiefly concerned with average or aggregate values, while "from the modern point of view the study of the causes of variation of any variable phenomenon, from the yield of wheat to the intellect of man, should be begun by the examination and measurement of the variation which presents itself." This leads at once to the idea of a frequency distribution, and to that of a hypothetical population of which the data observed may be considered as a sample. The behaviour of the different "constants" or typical values chosen to describe a population, when random samples are taken, is the basis of the tests of significance by which we can examine whether or not the data are in harmony with any suggested hypothesis. If, for instance, we wish to compare the rates of growth of two parallel cultures of an alga, we shall not be able to decide if the difference is definite enough to assert that culture B was growing more rapidly than culture A, unless we know what sort of chance variations in the rates are to be expected in samples of that size in which no real difference exists. The three most important distributions—the normal, the binomial, and the Poisson—are clearly described and illustrated, and also the manifold uses of Pearson's "Goodness of Fit" test of the agreement between observation and hypothesis.

"Student" gave in 1908[1] tables which made it possible to test whether the observed mean of a small sample differed from any theoretical mean to a greater degree than was likely to arise by pure chance. Mr. Fisher gives these tables in a simplified form, and also shows how to use them for the even more frequently recurring problem whether the difference between two observed means of small samples is large enough to justify the assumption of a real difference between the samples. From the significance of means we are led on to the idea of "regression"—i.e., to the expression of the average value of any variable in terms of the values of one or more other variables—e.g., the average yield of a cereal for given values of rainfall and temperature during the preceding year. The treatment of the correlation coefficient—a measure of the degree in which two quantities increase or decrease together—is clear, but Mr. Fisher seems to do less than justice to the more complete measure of association, the correlation ratio. Tables are given to test the significance of differences in correlations found from small samples, and to combine a number of independent estimates into an improved estimate by means of a transformation, suggested by the author, which leads to a simpler distribution of sampling errors than that of the correlation coefficient itself. The final chapters on intra-class correlation and the analysis of "variance" will not be found easy by the beginner, but will repay careful study on the part of the student with experience, and will help him to grasp the analogy between evaluating the correlation between members of the same class (say correlation in yield of potatoes grown on the same patch), and the estimation of the relative importance of different groups of factors causing variation. The book contains much that is of value, and will be useful both for reference in practical work and as a summary of the treatment of small sample problems. The average beginner in statistical methods will, however, find himself at times in rough seas if he tackles it alone as his first introduction to statistics.

## TUBERCULOSIS.

*Die Lungentuberkulose.* Third edition. By Dr. FELIX KLEMPERER. Berlin and Vienna: Urban and Schwarzenberg. 1925. Pp. 289. M.10.80.

Dr. Klemperer's text-book has evidently found a place in German medical literature, for this is the third edition to appear since 1920. The book is well-balanced and gives a proportioned survey of the subject, from the historical introduction to an appendix on climate in tuberculosis. In the chapter on pathological anatomy the writer uses the nomenclature of exudative and productive tuberculosis, introduced by Aschoff, which in continental writings of recent years seems to have replaced the older nomenclatures of tuberculosis. Gräff and Küpferle's classification of primary, bronchogenic, and hæmatogenous is also given. The use in addition of the terms "primary," "secondary," and "tertiary tuberculosis," on the analogy of syphilis, appears to us to confuse rather than to help. In the brief section on statistics, figures are given showing the influence of the social factor in tuberculosis; here the death-rate is arranged for families with different incomes, whilst a subsequent table shows the influence of the housing problem by tabulating the death-rate according to the number of rooms per family. The table giving comparative mortality-rates for the different European countries is meagre and incomplete. In the chapters on diagnosis, modern serum diagnosis and X ray examination receive due consideration, and in chemotherapy the heavy metals and other modern drugs are discussed, as well as the recent work on sanocrysin. Treatment with tuberculin is dealt with at considerable length, Friedmann and Ponndorf's methods receiving an unusually large amount of attention. The Deycke-Much antigens are also described in detail. These various active immunisation methods evidently continue to play a larger part in the treatment of tuberculosis in Germany than they do in this country. Artificial pneumothorax technique and surgery of the chest are also discussed, but these important sections appear to us to be summarised rather too briefly in comparison with the greater detail given to specific inoculation treatment. A bibliography chiefly confined to German works is excellent as far as it goes. The book contains numerous illustrations of value, and is a sound work eminently suitable for the general practitioner and the post-graduate student.

## ESSENTIALS OF PSYCHIATRY.

By GEORGE HENRY, M.D., Senior Physician, Bloomingdale Hospital. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. Pp. 199. 13*s.* 9*d.*

UNTIL the pathological bases of mental disorder are properly established, it is fairly sure that there will not be a really good book in psychiatry. At present psychiatry is too elusive and too wide a subject to lend itself to text-book treatment, and the only chance for an author to achieve some measure of success is to decide beforehand exactly what aspect he is going to stress and to which public he is going to appeal, and then to keep this object relentlessly before his eyes. For instance, he may deal with insanity as it appears to the clinician, the biochemist, the psychologist, the nurse, the social worker, or the advocate of religion, and, if he endures to the end, he has a good chance of teaching his limited public quite a lot that they did not know before. He may, if he wishes, include all that the pathologists have discovered up to date about insanity; it will not appreciably distend his book, and so far from confusing the issue will clear up several points which would otherwise remain obscure. But if he once falters and hopes to compromise between more than two at most of these points of view he is lost.

This is the rock upon which Dr. Henry has floundered. It is obvious that he has been powerfully attracted by the claims of the social worker to psychiatric knowledge, and very rightly. There is a crying need among voluntary helpers for a sound, intelligible, popular work on mental disease. But, having this desire, he should have followed it instead of attempting to give his book a veneer of clinical respectability at the same time. The result has been a splitting-up of his personality into five or six portions, of which not one possesses enough of the original interest-flow to make it worth while in itself. He has dealt with the clinical aspect, but so superficially and flittingly that the clinician will turn away empty. He has pronounced leanings towards Freudian psychology, but he never develops fully its implications in the subjective life of any one case. He has a chapter on insanity and law, where he indicates a few details on certification and responsibility, and adds a good chapter on nursing, written by Miss Adèle Poston. There is hardly a word on pathology or morbid anatomy, and not a single reference to another book. He only obtains relief from the abstract and passive kind of attitude which obscures the clinical part of his book when he is writing frankly for laymen about evolution, psychiatry for the social worker, mental hygiene, and the number of great men who have had something wrong with their minds. This section is of its kind excellent, and the author would be well advised to go further and produce a book for the social worker written, like this one, "in language which is within the range of familiarity to the general public," but free from a dead weight of unhappily-presented clinical material. The present work cannot be of use to the professional psychiatrist, and is too cumbersome for the amateur. It is, nevertheless, an attempt at a difficult task, and Dr. Henry deserves credit for it. He is obviously enthusiastic enough about his subject to try to do better next time.

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[1] Biometrika, vi., 1-25.

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VETERINARY POSOLOGY.

*Table of Veterinary Posology.* And Other Information for the Use of Students and Practitioners. Fifth edition. By G. A. BANHAM, F.R.C.V.S., and WM. J. YOUNG, F.R.C.V.S., D.V.S.M. London: Baillière, Tindall and Cox. *1926. Pp. 359.* 8s. 6*d*.

IN the preparation of the fifth edition of this book the authors have had material help from Mr. A. W. Noel Pillers, Mr. H. Gray, Mr. J. S. Lloyd, Sir John McFadyean, and Prof. F. T. G. Hobday. The manual has been increased in size by 100 pages, and in these useful information is given on the identification of parasites, and the Animals (Anæsthetics) and Horse-Breeding Acts. The Dictionary of Synonyms and Trade Names for Drugs is a long and comprehensive one, but it is by no means exact and needs some revision. For example, *oleum kervinum* and *oleum menthæ* are not trade names for castor oil and oil of spearmint respectively. The posological section of the work is well up to date, but we notice omissions of all the salts of silver in the *collyria*. As an animal product of wide application insulin might deserve mention.

The book is well known to all veterinary students and practitioners, and each successive edition has been an improvement and advance on its predecessor. We hope that no further increase in size will be made, since the work is designed for handy and quick reference.

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CHRONIC PANCREATITIS WITH JAUNDICE.

*Pancréatites Chroniques avec Ictère. Causes, Diagnostic et Traitement. Valeur et Résultats Éloignés de la Cholécystogastrostomie.* By Dr. PIERRE MALLET-GUY, Interne lauréat des Hôpitaux de Lyon, Aide d'Anatomie. Paris: Masson et Cie. 1925. Pp. 307. Fr.25.

Dr. Mallet-Guy has collected a series of interesting observations concerning those rare cases of jaundice due to chronic inflammatory lesions of the pancreas, with special attention to the results of cholecystotomy and cholecystenterostomy for the relief of this condition. The diagnosis between such lesions and those due to slow-growing cancers of the head of the pancreas or of the papilla of Vater is practically impossible and can, as the author rightly points out, only be determined by the clinical evidence of recovery and survival after the operation. Even in malignant cases there is usually considerable immediate improvement, and it is only the existence of good health 18 months or more after the operation that justifies a diagnosis of chronic pancreatitis as the original lesion. Altogether a useful little book.

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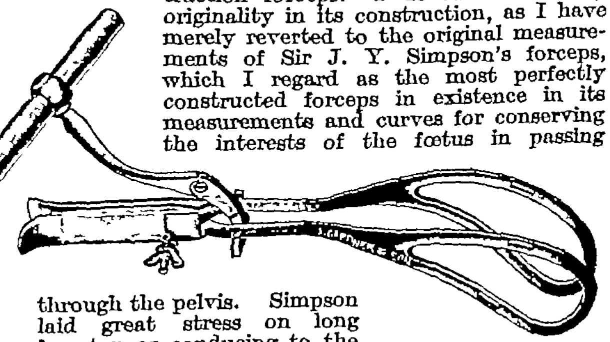
# New Inventions.

## AXIS-TRACTION FORCEPS.

THE midwifery forceps here illustrated is a modified *axis-traction instrument* which I devised 16 years ago and have used ever since with satisfaction. By its use I have reduced my fœtal mortality in difficult cases by about 10 per cent., as compared with my previous results in similar cases with the ordinary rod axis-traction forceps. I do not claim any originality in its construction, as I have merely reverted to the original measurements of Sir J. Y. Simpson's forceps, which I regard as the most perfectly constructed forceps in existence in its measurements and curves for conserving the interests of the fœtus in passing through the pelvis. Simpson laid great stress on long fenestræ as conducing to the safety of the child, and my experience fully bears out his contention. In the attempt to obtain *axis-traction* with traction rods the fenestræ have been shortened by half-an-inch in order to secure *the attachment* of the rods as high as possible, and even then real axis-traction at the upper *strait* is *not* secured, as I have demonstrated in my paper on the subject read to the Edinburgh *Obstetrical* Society in February of this year. In this forceps I aim at getting axis-traction without shortening the fenestræ. Traction with the traction handle secures sufficient axis-traction in *the cavity* and at the outlet in the ordinary average forceps case, and in the rare cases where axis-traction at the brim may be deemed necessary this can be secured *by tape traction through the eyelet holes in* the blades at the middle of the fenestræ. This tape *traction (as advocated by Fabre) secures* more adequate axis-traction at the brim than is possible with rods.



The measurements of this forceps from the Smellie lock upwards conform exactly to Sir J. Y. Simpson's measurements. I have shortened the handles for three reasons: (1) to indicate that they are not meant for traction; (2) to discourage the use of the handles for application (believing as I do that the blades should be applied by the shanks as tending to ensure their more gentle introduction by delicate manipulation); and (3) to allow the traction handle to work free from obstruction by the forceps handle without making the attachment of an inordinate length. The screw is the same as in the ordinary rod axis-traction forceps. Its use can often be to a great extent dispensed with, as the simple device which attaches the traction handle serves for all practical purposes to make the screw unnecessary after the forceps has been adjusted and traction has begun.

The construction of this forceps is very simple; there is no complicated mechanism to go wrong. It is a light instrument, not clumsy in appearance, and it combines the outstanding advantages of Sir J. Y. Simpson's original forceps with the added advantages of axis-traction and the minimum amount of compression of the fœtal head. In this forceps, I submit, the advantages of both the old and the new are conserved without detracting from the special features of importance in the construction of *either*. As it stands it is adapted mainly for traction in the cavity and at *the outlet, which practically nowadays* are the only situations where forceps should be used; but, in *addition, it* has potential arrangements for almost perfect high axis-traction by tape attachment should an exceptional case demand it.

The forceps is made by Messrs. Gardner and Son, Edinburgh, who have prepared standardised moulds so as to secure uniformity of the curves and fenestræ.

JAMES HAIG FERGUSON, M.D., F.R.C.P.,
F.R.C.S. Edin.

1926.

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disappear without the process of dissemination from undiscoverable primary tumours being stopped.

Certain points of interest emerging from the experience of individual centres should be pursued. Sepsis is cited more than once as a strong contra-indication to the use of radium. It is clear that a pyometra may result from its application to an infective cervix if fibrosis and stenosis follow, but even where no damming of discharges is to be feared infected areas appear to be unsuitable for radiotherapy, and this circumstance would seem to call for further study. It is but one of many points which remain unexplained. Our deep ignorance of the rationale of treatment by radium is revealed by the problems set out by the workers at St. Bartholomew's Hospital as still unsolved. Not only is it unsettled whether needles buried in the growth or screened tubes placed on its surface are more efficacious, but it is not even known what is the biological reaction to radiation of the individual cell, or whether the disappearance of the growth depends on the direct action of radium on the individual cell or on its effect on the surrounding structures or body fluids. Considering all these unknown factors, which include even such practical points as to whether a second application is of value or does actual harm, we are tempted to despair of any cal progress until the histological effects of this angerous and powerful weapon are more closely udied. Its haphazard empirical use may benefit dividual sufferers but can lead to no useful general nclusions. It is obvious that insufficient advantage being taken of the facilities for scientific investiga- n afforded by the Medical Research Council. For mple, of a total of 66 cases of sarcoma and lympho- ma treated, only 11 specimens were sent up for ination, though all centres have been repeatedly to supply material from which the results of n treatment might be correlated with the gical features of the tumour. The section on lignant diseases is concerned chiefly with gical conditions and blood diseases. With the former, the conclusion is drawn that completely efficient in creating an artificial e, the usual dose for this purpose being the body of the uterus for 24 hours. This would hardly appear to be substantiated from the London Hospital, where in four lium was employed to produce sterilisa- ote amenorrhœa was not obtained in any ients (who did not, however, become ugh they were treated with 100 mg. wo patients), for 26 hours (one patient), 24 hours with a second application of ours (one patient).

reasonable to expect conformity in and conditions of application at the centres in a therapeutic measure cal stage, but it is difficult to see result from such uncorrelated mbled here. It would seem that an of radium in the future should certain standard techniques, so ined may be to some degree the development of the emana- lies radio-active material in ay provide more uniform ne factor adds an inevitable vidual suffering is being say that the distribution it to the nation, nor need onnexion too closely with on its use in tuberculous ent issue by Dr. PHILIP

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[*See also p.* 2.

Gosse, from the Radium Institute, contains hopeful information concerning a widespread trouble. The medical uses of radium are undoubted, but the time has come when coördinated efforts are needed to evolve a standard technique.

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## THE SURGERY OF THE SPLEEN.

The spleen is no doubt sometimes useful; it is evidently not necessary; medicine supplies us with illustrations of how it may be harmful. The very lack of comprehensive knowledge of the part which is played by this curious organ in the physiology of the body lends interest to any observations which may be made in human beings who suffer from splenic disease. Very possibly, as has happened in connexion with other bodily structures in the past, the secrets of splenic function will ultimately be deduced by arguing backwards from pathological disturbances. Certain it is that much of the surgery of the spleen has been arrived at quite empirically by clinical observation. The discussion on the surgery of the spleen at the Rome Congress, briefly summarised in another column, brought out very well the position to-day. Operative treatment may be called for when the spleen has been injured, when it has become abnormally loosely connected with its lodgment, when it has been invaded by certain organisms or by the echinococcus, when it is the seat of true tumour formation, and in certain diseases associated with splenic enlargement or changes in the blood. In injuries splenectomy is the procedure of choice, even when the rupture is not large; the organ does not allow of suture in general owing to its friability, and plugging a wound has been frequently followed by secondary hæmorrhage or sepsis. Yet it must be borne in mind that loss of the spleen seems to be a more serious event for the child during its period of growth than for the adult. To combat the ill-effects in children after splenectomy, small transfusions of blood and the administration of splenic or bone-marrow extract have been recommended. When the spleen is abnormally mobile, fixation has brought relief to a number of patients, yet sometimes removal is the better course, and it is a necessary one when torsion of the pedicle has taken place. Abscesses of the spleen are usually best treated by incision and drainage, by the posterior thoracic route when they are at the upper pole, through the abdomen when at the lower one. Only very exceptionally, when the abscess has remained wholly intrasplenic, is removal of the organ the proper procedure.

Most interest, however, circles around the question of splenectomy in those diseases of obscure pathology associated with splenic enlargement and usually with changes in the blood picture. The operation has been tried out sufficiently for us to be able to say definitely that it is absolutely called for in certain of these conditions and absolutely contra-indicated in others, whilst for some its value must remain doubtful until more results are collected. In splenic anæmia, which includes Banti's disease, it is generally accepted that the results are extremely good, particularly before hepatic cirrhosis has come on, but Mayo recommends that the operation should be performed even in the terminal stage as, after it, some patients have got well and lived for years. In hæmolytic jaundice operation is demanded only in the acquired disease and the recovery is usually symptomatically complete and permanent, though the fragility of the red corpuscles may remain. In Gaucher's disease it appears very doubtful whether splenectomy influences very much the course of the malady. In pernicious anæmia the operation has been well spoken of by certain surgeons, and the mortality has been very much reduced by careful selection of the time to intervene and the assistance of blood transfusions. Although transient improvement appears to have followed, it does not seem that the progressive course of the disease has been really affected to an appreciable degree. Splenectomy in purpura hæmorrhagica has produced striking, almost dramatic, results in rapidity of cure and its permanency. The former belief that this depends upon a restoration to normal of the blood platelet count would, however, seem to have been disproved by the experience of Brill and Rosenthal in two cases under their care, for the platelets did not increase in number, yet the patients were cured. Leukæmia has for long been regarded as a disease in which surgery was contra-indicated, but Mayo, in 1924, reported that three patients had lived more than five years and eight for more than three after removal of the spleen; moreover, the danger of the operation has been considerably reduced by previous X ray exposures. Perhaps in the more chronic type of the disease surgery is justifiable and called for.

Many problems connected with the spleen remain unsolved. There is, for all practical purposes, only one surgical procedure possible in the treatment of its diseases—namely, its ablation. The scope of surgery is, therefore, obviously limited. Operative treatment will remain the method of choice in those conditions which arise in the spleen itself, whilst it can be no more than alleviative where the splenic condition is secondary. Only further study in the future will enable us to classify splenic diseases into these two categories correctly.

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## HELP IN CHOOSING A CAREER.

Until very recent years, and even yet to a quite large degree, the choice of employment for a child leaving school has been determined by personal liking, parental suggestion, tradition (as typically in the mining and fishing industries), or opportunity. There has been, however, for some time a growing tendency on the part particularly of large industrial firms to make a selection by some method of testing of the most suitable types for their special work, and, on the other hand, on the part of educational and other authorities to discover for what work any particular child is best suited. Vocational selection and vocational guidance thus represent two distinct movements with one end in view. The construction of new intelligence tests, especially those of a non-linguistic type, has greatly contributed to these movements and has at the same time been fostered by them.

The most complete and systematic study of methods applicable to vocational guidance that has so far appeared has just been issued by the Medical Research Council.[1] The work was carried out by the Industrial Fatigue Research Board and the National Institute of Industrial Psychology, and consisted of an intensive study of 100 children (52 boys and 48 girls), who were due to leave school within a year. The main object of the study was to determine the best methods of testing for the purposes of vocational guidance, but in addition, actual advice was given to the parents on the basis of the results obtained, and a further inquiry was made two years later in order to discover the wisdom or otherwise of the advice given. The methods used were therefore largely experimental, and further research may lead to very considerable modifications. That the work was under the general direction of Dr. CYRIL BURT, the psychologist to the London County Council, is a guarantee of its efficiency, and he had four able helpers in Miss FRANCES GAW, who had already standardised a group of performance tests, Miss LETTICE RAMSEY, Miss MAY SMITH, and Miss WINIFRED SPIELMAN, who report individually on their own sections of the work.

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[1] A Study in Vocational Guidance. H.M. Stationery Office. 1926. 4s.

The schedule of investigation was comprehensive. An inquiry into home conditions, carried out at home, and including family and personal history, and a questionnaire regarding the child's out-of-school behaviour, hobbies, and interests, were the necessary preliminaries. Reference to school medical records was made, but no special medical examination was carried out. This is evidently felt by the director of the research to be a weakness which should be remedied in future investigations. Quite frequently, however, medical contra-indications had to be ignored, and there is certainly some truth in the contention that temporary physical conditions should not be given much weight in the choice of an occupation. The Stanford scale of intelligence tests was employed, supplemented by Miss GAW'S scale of performance tests and Pintner's non-language group test of intelligence. Dr. BURT'S scholastic tests served as a measure of school attainments, and, in addition, certain tests of special practical ability—mechanical, motor, or constructive—were utilised, and some interesting new tests of creative imagination. It was, however, in the estimation of character qualities that the greatest difficulty arose, and some striking comparisons were made in this connexion between the estimates made at one interview by observers to whom the children were strangers, and those made by teachers or others who knew the children well. Emotional qualities were found the easiest to assess by strangers, but with regard to definitely moral qualities, the provisional conclusion is that until more reliable moral tests are available, confidential reports by teachers and parents will have to be accepted.

An inquiry made into the circumstances obtaining after two years in the several occupations yielded interesting results, remarkably satisfactory considering the experimental character of the whole investigation. Of those who obtained work as advised all were satisfied (though not always with the salary), while of those who got work quite dissimilar to that advised, more than half were dissatisfied with the work or its prospects. The conclusion of the director is that the chief weakness of the scheme is imperfect knowledge, not of the children, but of occupations to suit their special aptitudes. The advice, he considers, was not always as good as the results of the tests, because of insufficient "job analysis." The booklet is of great interest, partly as an example of the wider application that is now being made of intelligence tests of different types, and partly from its own intrinsic significance. It is a matter of vast practical importance both to the country and to individuals that each person should find the occupation for which he is best fitted. One may, however, be permitted a doubt whether so comprehensive a scheme of examination is practicable on any large scale. And, although the workers in this investigation have not ignored it, it does seem necessary to insist on the importance of considering a child's own personal desires, where these are strongly marked. These desires do not always coincide with the child's abilities, and it must in some cases be a difficult matter to decide which is to be set aside. Have not the psychologists themselves warned us of the dangers of an uncongenial occupation?

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**AN HISTORIC ORTHOPÆDIC HOSPITAL.**—The Duke of Devonshire has formally opened Bretby Hall as an orthopædic hospital for Derbyshire. The house, which succeeded that in which the author of the famous "Chesterfield Letters" lived, was built early in the nineteenth century and was ultimately inherited by the late Earl of Carnarvon, whose mother was the only daughter of the sixth Earl of Chesterfield.

# Annotations.

"Ne quid nimis."

## MERCHANT SEAMEN.

THE health of our merchant seamen, or strictly speaking their ill-health, possesses two champions in the persons of Dr. Howard Jones and Fleet Surgeon W. E. Home. Both have drawn attention to the absence of hygienic conditions in the merchant service, to the high mortality—so far as it can be estimated—existing among the men, and to the difficulty of obtaining accurate information as to the exact position. Fleet Surgeon Home has described[1] conditions aboard ship from his own experience, and the picture he has drawn is far from pleasing; yet no effort has been made to contradict it. During the past fortnight he has returned to the charge in our columns in an effort to estimate the serious toll of lives taken annually. The difficulties he has had to face in making his estimates are great; for uncertainty surrounds on the one side the size of the population at risk—i.e., the number of merchant seamen, and on the other the deaths to be ascribed to this population. The Board of Trade issues some information as to deaths among seamen while signed on as crews, but even here the cause of death is often only as correct as a ship's captain can make it. The Board has no information as to deaths among seamen ashore and no longer in active service; that is to say, it has no information as to deaths from those very diseases for which an unhealthy occupation directly prepares the way. The Registrar-General, on the other hand, obtains information as to deaths of seamen ashore, but none as to deaths abroad while on service, and his population at risk is merely that of seamen at home at the moment when the decennial census is taken. It is put forward by Fleet Surgeon Home that between two stools—in this case two Government departments—the case of the merchant seamen is allowed to fall unexplored; the plea seems sound. He asks that the whole matter should be transferred to the Ministry of Health for thorough investigation so that the facts, so far as they can be ascertained, shall be known.

The available evidence displays the merchant service as no health-giving occupation, even after every latitude has been granted for errors in data. But accident risk, with the disappearance of the sailing ship, has greatly diminished, and this is something to the good. Sails, however, made way for the stoke-hole and the lot of the merchant seaman there has been far from enviable. The substitution of oil fuel for coal is now coming to act beneficially, as has been shown by Vigné and Cury.[2] These investigators contrasted the time lost for sickness on Atlantic liners before and after the introduction of oil, and found great advantage on the side of the new fuel. These changes, however, cannot entirely make up for overcrowded and unventilated sleeping bunks, absence of feeding accommodation, and lack of washing facilities. The treatment of the human factor in our merchant service, when its history comes to be written, will rank alongside that meted out to children in our factories a century ago—space for cargoes is still too valuable to sacrifice for human life.

## HOSPITALS AND RECOVERY HOMES.

FOR some years past hospital specialists have been acutely divided as to the effect of recovery homes upon the work and finance of the parent hospitals. On the one side it is argued that these homes decrease waiting-lists, reduce the cost of working, and increase the economic use of the hospital staff and apparatus. That was the line taken by Dr.

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[1] W. E. Home: Merchant Seamen. John Murray. 1922.

[2] Vigné, O., and Cury, H.: Les Conditions d'hygiène dans les Chaufferies au mazout à bord des navires marchands. Bull. Off. Internat. d'Hyg. Pub., 1925, xvii., 979–89.

F. N. Kay Menzies and Mr. R. H. P. Orde in a paper read at the annual congress of the Hospital Officers' Association last year, which we printed in substantial length at the time (THE LANCET, 1925, i., 1115). Their paper was intended as a refutation of the conclusions of a subcommittee of King Edward's Fund, arrived at, after long and careful inquiry, in 1923. Now Mr. R. H. Maynard, the secretary of that Fund, has addressed a rejoinder to an ordinary meeting of the Association, in which, in arguments based upon the diagrammatic method, he essays to prove that the average cost of treatment in a hospital and in a home of recovery—an intermediate place between the hospital and the convalescent home—is approximately the same. His figures are necessarily complicated and, since it is the sacred duty of any given expert to pick holes in the conclusions of any other expert, we have no doubt that Dr. Menzies and Mr. Orde still have shots in their locker. Meanwhile, it seems probable that, since the circumstances of one hospital differ from those of another, both sides may sometimes be right. In any case, even if recovery homes are, as a fact, in some instances cheaper than hospitals, there is clearly a strong case for their extension. Notwithstanding the high importance of reducing hospital expenditure, finance is perhaps not the best aspect from which to consider the question. The object of hospital treatment is to cure the patient as quickly as may be consonant with thoroughness, and there are obvious, and almost overwhelming, advantages to himself in sending him to the pure air and the reposeful atmosphere of a recovery home as soon as possible. So long as he is in a hospital ward he knows that he is a "case" and his mind is never free from some degree of anxiety and apprehension; once he is in a recovery home he knows that he is getting well. The problem is, therefore, fundamentally psychological and its financial aspect, although full of moment, is of secondary significance. Thus so long as recovery homes do not send up costs they are plainly highly desirable, and the more we have of them the better for the patients. Fine air and quiet rural surroundings are always important elements in convalescence from illness serious enough to have needed hospital, and probably surgical, treatment. Moreover, the hospitals cannot afford to lose sight of the secondary advantage of the quicker emptying of beds.

## A REMARKABLE CASE OF CANCER.

A CASE of cancer of quite exceptional interest is reported by MM. P. Lecène and A. Lacassagne.[1] In February, 1923, a woman had been operated on for advanced cancer of the breast from which a few months after the operation she died with extensive metastases. A fortnight after the operation a student of medicine, aged 21, was told to remove by puncture the fluid which had collected under the scar. In doing so, as the result of a sudden movement on the part of the patient, the syringe broke in the student's hand and the needle which was attached to it was driven deep into the palm of the student's left hand. A small amount of fluid was already in the syringe and some of it was thus injected into the deep tissues of the hand. The student cauterised the wound himself about three-quarters of an hour after the occurrence. During the following two years he noticed nothing. But in February, 1925—that is to say, two years afterwards—he noticed some swelling with diffuse pains. A month later on examination swollen lymph glands could be felt in the left axilla, which were diagnosed as tuberculous in view of the previous history of tuberculous glands in the neck during childhood. The glands were removed for diagnostic purposes. Soon afterwards the swelling in the left hand became more circumscribed and threatened to break through the skin so that an operation became necessary. On microscopic examination it was found that the tissue removed from the hand was a malignant new growth of the nature of a spindle-celled sarcoma and that the lymph glands contained metastatic deposits. A few months later, in September, 1925, four separate nodules appeared in the arm and forearm. They were adherent to the skin. One of these nodules was removed and proved to have the same structure of a spindle-celled sarcoma. The whole arm was then removed by disarticulation at the shoulder-joint, and at the time of publication the patient was quite well.

The paper is accompanied by very clear drawings which show quite clearly that the tumour in the woman has a very different histological structure from that in the man. The former is described as an atypical mammary carcinoma. The several new growths in the man present in all the sites the picture of a typical spindle-celled sarcoma. Pieces of the sarcoma were transplanted into animals of different species (monkey, dog, chicken, mice, rats). The results were all negative. If it is assumed that the neoplasm in the man resulted from the transplantation of living cells, the further assumption becomes necessary that in the course of this transplantation a sarcoma arose from the carcinoma; or, alternatively that, in spite of its histological appearance, the neoplasm in the man was not a sarcoma but an atypical epithelioma, and that the mammary cells had undergone this change as the result of their introduction into a new host. Neither of these two explanations is very convincing. In the many hundreds of animal tumours which have been studied in series of transplantations such changes have never occurred at the first transplantation. The transformation of an epithelioma into a sarcoma has been observed as a very rare occurrence in a few strains of tumours. But even then it was a gradual process, beginning as a mixed tumour in which, on subsequent transplantation, the sarcoma cell, gradually overwhelming by its more rapid proliferation the carcinoma, and not, as in this case, a complete transformation at the first transformation. The third possibility is that we are dealing here not with the reproduction but with the new formation of a tumour. Such an explanation would presuppose some process of microbic infection similar to that postulated by Gye. Whatever the explanation may be the case is of unique interest.

## GUILTY BUT INSANE.

IF the report of Lord Justice Atkin's Committee on Insanity and Crime by no means satisfied the views of the medical profession, it did at least propose one obvious reform of the law—namely, the abolition of the illogical and confusing verdict of "guilty but insane." The Committee's report, upon which we commented when it appeared in 1923, points out unanswerably that the word "guilty" in criminal trials should connote only criminality, the commission of a crime—the very thing which a finding of insanity negatives. Such a finding is a verdict of acquittal, for an accused cannot be "guilty" of a physical act which is not in itself an offence. In the face of the Committee's recommendation it seems hardly credible that the Army and Air Force (Annual) Bill proposes to perpetuate the present illogicality by making it possible for military and Air Force courts martial to give a verdict of "guilty but insane." The official notes on the clauses of the Bill speak airily of bringing military law into line with the Trial of Lunatics Act of 1883. This is as progressive a proposal as if one were to suggest bringing modern ordnance up to the standard of primitive man's bow and arrow.

The story of this legal muddle has been told before, but evidently still requires repetition. The Criminal Lunatics Act of 1800 allowed a jury, when acquitting an accused person after hearing evidence of his insanity, to return a special verdict that he was "insane at the time of the commission of such offence" and that he was being acquitted on account of his insanity; thereupon the accused was kept in custody during His Majesty's pleasure. This worked well enough until, some 80 years later, a madman named Maclean fired a pistol at Queen Victoria. He was found not guilty on the ground of his insanity, and in the heat and sensation of the moment the law was unfortunately altered. Her Majesty, as the recent publication of her correspondence has shown afresh, possessed strong and usually shrewd opinions which she was not afraid to express. Her feelings at her attempted assassination and at the result of Maclean's trial were natural and were doubtless shared by her loyal subjects. How could the man be "not guilty" when she had actually seen him firing the pistol? Accordingly Parliament passed the Trial of Lunatics Act of 1883, which superseded the 1800 enactment and permitted juries to say in such a case "guilty of the act but insane at the time," a finding usually abbreviated into the words "guilty but insane." This is the verdict criticised by Lord Justice Atkin's Committee. The Committee did not press for the immediate repeal of the 1883 provisions, but definitely advised their amendment when opportunity occurred. So far from finding an opportunity for the amendment, the Government now proposes to stereotype the mistake. The Atkin Committee stated the terms of the necessary amendment, and the Army and Air Force (Annual) Bill provides the chance for military law to set an example to civilians.

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[1] Annales d'Anatomie Pathologique, 1926, iii., 97.

## ROYAL INSTITUTE OF PUBLIC HEALTH.

THE annual congress of the Royal Institute of Public Health is this year to be held at Bristol over Whitsuntide, under the presidency of the Duke of Bedford. The inaugural meeting will be held in the Great Hall of the University on the afternoon of May 10th and sessions of the sections will continue until May 21st. The week-end will be devoted to excursions in the neighbourhood, and on Sunday the delegates will accompany the Lord Mayor and Corporation of Bristol to the annual "rush" service at St. Mary Redcliffe. The congress will meet in five sections, and a promiscuous number of subjects is to be dealt with. The Section of State Medicine and Municipal Hygiene will hold discussions on Recent Legislation and the Problem of Human Tuberculosis of Bovine Origin (opened by Dr. W. G. Savage), on the Production and Distribution of "Grade A (Tuberculin-tested)" Milk (opened by Lieut.-Colonel C. Maddock, M.D.), and a number of other subjects. For May 21st it has arranged a joint meeting with the Section of Pathology, Bacteriology, and Biochemistry, when a discussion on Cancer will be opened by Dr. J. G. Adami. Other important topics to be dealt with by the Section of Pathology include the Pathology of Epidemic Encephalitis (Dr. J. G. Greenfield and others); Rheumatism (Dr. Carey Coombs), and the Pathology of Tuberculosis (Prof. Lyle Cummins). These subjects will be discussed by many speakers, and, in addition, there will be interesting papers by individual medical men. The Section of Industrial Hygiene is to hear papers on Silicosis by Prof. Edgar Collis, its President, Dr. Norman Tattersall, and Prof. E. H. Kettle. At a joint meeting with the Section of State Medicine Dr. R. A. Lyster will read a paper on Factory Hygiene as Part of Public Health, on which Sir Thomas Oliver and Dr. Arbour Stephens will speak. To this meeting there will also be contributed Studies on the Mechanism of Lead Storage and Excretion, from the Harvard Medical School, by Dr. Joseph Aub and Dr. Donald Hunter. On May 21st the morning session will be devoted to Ventilation of Factories and Vocational Selection. The Section of Naval, Military, Air and Tropical Diseases is to hear a paper by Surg. Captain R. J. Mackeown on the Standard of Public Health of the British Isles as revealed by the Navy Personnel of To-day, with Suggestions for Improvement; and also one on the Incidence and Prevention of Venereal Disease in the Royal Navy. This section naturally covers a large field, as also does that which is devoted to Women and the Public Health, whose chairman is Miss M. F. Townsend. Her presidential address will be devoted to the Care of the Crippled Child and will be followed by papers on the Tuberculous and the Rheumatic Child by Dr. Owen Morris and Dr. A. P. Thomson, and a discussion in which Sir Henry Gauvain and others will take part. At the second session of the section Lady Barrett, M.D., will deal with antenatal organisation, and at the third Dr. Innes Pearce and others will speak on Racial Progress. The final session will be addressed by Miss May Smith and Miss Sheila Barrington on the Psychology of Women Workers, and on the Married Worker by Dr. Christine Murrell. General interest will certainly be felt in the proceedings of the congress, and it is expected that the attendance will be large. A fuller account of the programme and particulars of the facilities offered to members and their friends may be had from the hon. secretaries at 37, Russell-square, London, W.C. 1.

## SMELL.

As Prof. Elliot Smith has often reminded us, primitive land animals lived in a world where perception must have been mostly dominated by the smells of things. In their evolutionary progress vision and hearing became relatively more important. In the higher animals all three are well represented, but in man smell has not made anything like the advance of the other senses, and indeed it seems now to be in much the same place as it was in his remote ancestors. Associated with this primitive condition is the fact that the mind of man has great difficulty in dealing intellectually with the sense of smell and what it perceives. In the *Glasgow Medical Journal* for March, 1926, Dr. J. L. Halliday has an interesting discussion of the position. At present we have not got even a qualitative scale of smells, still less any means for their quantitative measurement. The sense seems to be fatigued extraordinarily quickly, which makes its measurement very difficult by the minimal perceptible dose method which is the only one available. Smells are individual, and no smell seems to have a clear relation to another smell. And while any smell may have the most vivid associations in the mind with other circumstances—evidently the useful state in primitive conditions—the human brain has not yet risen to abstracting smells, so that they can be associated by similarity with one another. There is hence no scale or spectrum of smells, and smells may be said to have no intellectual value. Interest is being taken in various quarters in this sad state of affairs; there is an occasional periodical *Osmics*, and Mr. E. E. Free has an article in the March issue of the *Forum*, and we may look forward with confidence to the time when human ingenuity will denominate smells as it has colours. It is after all not so very long ago that the colour of blood could be described only as being blood-coloured, just as nowadays we can get no further than saying that blood smells like blood. Though, to be sure, people realised that blood is not very dissimilar in colour to some flowers thousands of years before they came to compare the smell of blood to the smell of anything else.

## CONTROL OF URINARY INCONTINENCE BY THE GRACILIS MUSCLE.

EPISPADIAS in the female presents a difficult problem to the surgeon. Dr. Clyde Deming, in the *Journal of the American Medical Association* (March 20th, 1926), has recently described a case in which incontinence was satisfactorily controlled by transplanting the gracilis muscle to form a sphincter. His patient was a woman of 21, whose epispadias had been corrected at the age of 20 with marked improvement of the appearance of the external genitalia, but without change in control. She had a long flaccid urethra without any external sphincter, and only a minute trace of the internal sphincteric fibres. Young's method of operation gave her continence at night, but still she could not hold her water when standing, and a third operation to diminish the calibre of the urethra gave no improvement. At the fourth operation the gracilis was incised between the two areas of nerve-supply and its proximal portion was wrapped round the urethra, sutured back on to itself, and fastened to the under surface of the pubic arch with fine double zero chromic sutures. The wound healed by first intention and the patient could walk about the ward after the third week without any dribbling of urine. The muscle tone was always good and was strengthened by exercises and by electrical treatment. A year later she was able to walk for two hours and to enjoy dancing and social life for the first time. The bladder remained under complete control. The results of other methods of operation, as reviewed by Dr. Deming, have not been very encouraging. He states that among the 30 cases recorded by Novè-Josserand and Gotte only three patients were continent after operation, and there was no appreciable improvement in any of Steiner's series. The region of the perineum provides no muscles with normal sphincter action that can be transplanted into the neck of the bladder, nor are there any straight muscles that can be arranged around the urethra, as the rectus is arranged around a colostomy opening. The pyramidalis, he states, has been used unsuccessfully by Stetinger and Rubsamen, and Rubsamen and Bryosowsky have used the levator ani with some degree of success. One case has been recorded by Novwy of the successful transfer of the adductor and biceps muscles. Perhaps Dr. Deming's procedure will give more satisfactory results. The gracilis seems to be peculiarly suitable for transplanting; its easy accessibility, its double nerve-supply, and the high entrance of the nutrient vessels make the operation an easy one, and it is to be hoped that other surgeons will publish the results of cases treated by this method.

## COLLIP'S PARATHYROID HORMONE.

IN the *Therapeutic Gazette* of March 15th O. H. Petty, W. H. Stoner, and H. W. Schaffer describe clinical application of the recent work of J. B. Collip. It will be remembered that Collip announced some time ago that he had succeeded in preparing an active substance from the parathyroid gland, which on injection caused marked rise in the blood calcium content of normal animals, also administration of this extract was found to cure the tetany of thyro-parathyroidectomised animals. He also noted that by repeated injections it was possible to kill the animals from hypercalcæmia, one of the symptoms being vomiting. In his original publications Collip described very briefly a few clinical tests with his material, but, as he stated, the value of the preparation could not be judged from these. It is very interesting, therefore, to turn to the first published account of a fairly extensive series of cases treated with this preparation. The authors use material made by the Eli Lilly Company. After reviewing the literature very briefly, they proceed to a description of the cases treated, composed mainly of infantile tetany, diabetes, and obesity. They conclude that administration of the hormone is of value in the treatment of infantile tetany, and in some cases of diabetes it is possible to reduce the insulin dosage when the parathyroid hormone is administered. They emphasise the fact that the preparation can never be used without very adequate control by means of frequent blood calcium estimations. As they point out, the estimation requires skill, and they recommend that all workers should employ the same technique since the various methods for the estimation do not yield strictly comparable results. In the same number of the *Therapeutic Gazette* there is an editorial comment on a paper by Lisser and Shepardson which appeared in *Endocrinology*, the authors having treated a case of tetania parathyreopriva with Collip's hormone. The case was a woman of 30 whose thyroid was removed for adenomatous goitre, and unfortunately three parathyroid glands were removed. Shortly after the operation the patient developed typical tetany. The patient was treated by injections of the hormone, and her blood calcium, which previously was low, returned to normal and the objective and subjective symptoms disappeared. They conclude that the material is a true specific.

## POST-VACCINAL NERVOUS DISEASE.

THE international conference on small-pox, arranged by the Health Committee of the League of Nations at The Hague at the turn of the present year, decided to give close attention to the affections of the central nervous system reported in some countries to have followed vaccination. Dr. Levaditi had presented to the Paris Academy of Medicine some months earlier an account by three Dutch observers of 34 cases of post-vaccinal encephalitis (14 of them fatal) which had occurred in Holland over a period of 18 months. The Departmental Committee on Vaccination, appointed by the Ministry of Health, now invites the assistance of all members of the medical profession who are in active practice in this country in the elucidation of this question. The Committee has decided to make a special study during the next 12 months of all cases in which the occurrence of acute disease of the central nervous system (such as meningitis of any kind or origin, encephalitis, polioencephalitis) has been "post-vaccinal"—using this term in the sense that the first symptoms have occurred within four weeks of vaccination. The object of the Committee is to obtain a collection of data sufficient to enable them to ascertain whether there are any features which distinguish cases of acute nervous disease which happen to be "post-vaccinal" (as defined above) from those which are not. The evidence so far available points to certain cases as having been due to encephalitis virus carried by the patient, the effect of vaccination being to activate a virus already present. The request which is therefore made to all practising members of the medical profession is that when called in to any case of disease of the central nervous system with an acute onset they will not fail to inform the Committee as soon as possible of every case in which they have ascertained that vaccination has preceded the onset of the symptoms within a period of four weeks. The intimation should be sent as speedily as possible to the Secretary of the Departmental Committee on Vaccination (Dr. J. R. Hutchinson), Ministry of Health, Whitehall, London, S.W. 1.

## MULE-SPINNERS' DISEASE.[1]

EPITHELIOMA associated with mule-spinning in cotton mills has only been recognised generally within a very recent period, although in THE LANCET of Dec. 2nd, 1911, Mr. John Morley, the demonstrator of anatomy at Manchester, drew attention to the frequency with which a certain class of operatives suffered in this way. The ætiology of the condition was established by the work of Mr. S. R. Wilson, who in the course of an investigation into epithelioma of the scrotum collected a series of 40 cases from the records of the Manchester Royal Infirmary and the Christie Cancer Hospital which had occurred during the ten years previous to the publication of Mr. Morley's notes. The importance of the matter is now widely recognised, and in March of last year Sir William Joynson-Hicks appointed a committee of inquiry, with Sir Gerald Bellhouse as chairman, the other members being Prof. A. H. Gibson, Mr. F. Holroyd, Mr. E. Judson, Sir Thomas Legge, Dr. Archibald Leitch, and Lieut.-Colonel A. B. Smallman, Dr. S. A. Henry acting as secretary. The report of this committee has now been published and a leaflet has been issued from the Home Office simultaneously which sets out the facts for the consideration of all concerned in the cotton industry. The fact that mule-spinners are liable to an affection of the skin which if not properly and promptly treated may become malignant is pointed out, and the need for the serious attention by these operatives to any small warts or ulcers on the skin that may develop in the neighbourhood of the scrotum is insisted upon. Any skin lesion of the part should receive prompt medical attention, since though all warts or ulcers do not necessarily become cancerous the risk is there and should be removed. Frequent washing with soap and water is enjoined in order to keep the scrotal skin healthy.

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[1] Report of the Departmental Committee appointed to consider Evidence as to the Occurrence of Epitheliomatous Ulceration among Mule-spinners. H.M. Stationery Office. 1s.

A leaflet on the subject of epitheliomatous ulceration in pitch- and tar-workers was issued recently from the Factory Department of the Home Office,[1] which contained substantially the same advice, and as this leaflet was widely circulated among mule-spinners it may be hoped that operatives are aware of the measure of the risks and the methods to avoid them.

THE King has promoted Lord Dawson of Penn, G.C.V.O., K.C.M.G., C.B., to be a Knight Commander of the Order of the Bath, and has appointed Sir Frederick Stanley Hewett, K.C.V.O., a Knight Commander of the Order of the British Empire.

WE are informed by the President of the Surgical Section of the Royal Society of Medicine that when Dr. W. E. Gye reads a paper on May 5th before the Surgical Section on the Origin of Tumours, Mr. J. E. Barnard will give a demonstration on Microscopical Methods.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg.-Capt. R. H. Mornement to the *Vivid* for R.N. Barracks, Devonport.

Surg Lt.-Comdr. W. J. Morris to the *Curlew*.

## ROYAL ARMY MEDICAL CORPS.

Col. R. S. Hannay to be Maj.-Gen., vice Maj.-Gen. H. A. Hinge, who retires on retd. pay.

Lt.-Col. J. W. Langstaff to be Col., vice Col. R. S. Hannay (promoted).

Maj. and Bt. Lt.-Col. T. S Dudding to be Lt.-Col.

### ARMY RESERVE OF OFFICERS.

Lt.-Col. P. H. Collingwood having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

## ROYAL AIR FORCE.

Flying Officer R. L. C. Fisher is promoted to the rank of Flight Lt.

Flight Lt. (Hon. Squadron Leader) E. Brown relinquishes his temporary commission on account of ill-health.

## THE PARKES AND THE ALEXANDER MEMORIAL PRIZES.

The Parkes Prize, open to officers of the Royal Navy, Army, and Indian Army of executive rank on full pay, other than professors and assistant professors at the Royal Naval Medical School and of the Royal Army Medical College, is of the value of 75 guineas in money and a gold medal, and the subject for the next competition will be the Means of Spread and Methods of Control of Bacillary Dysentery. The Alexander Prize, consisting of £50 and a gold medal, is open to executive officers of the Royal Army Medical Corps on full pay, other than professors and assistant professors at the Royal Army Medical College. The subject for the forthcoming competition will be the Various Aspects of Inflammatory Middle-Ear Diseases with Especial Reference to their Relation to Military Service. Essays should be sent to the Hon. Secretary of the Prize Committee for the respective competitions, Royal Army Medical College, Millbank, S.W. 1, on or before Dec. 31st, 1928. Each essay is to have a motto, and be accompanied by a sealed envelope bearing the same motto and containing the name of the competitor.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXX.—THE TREATMENT OF TUBERCULOUS DISEASE OF THE SPINE.

APPROXIMATELY half the cases of tuberculous disease of the spine originate before the age of 5 years, about one-quarter between the ages of 5 and 10, the remainder with decreasing frequency as age advances after the age of 10 years. Spinal caries is, therefore, commonly a disease of childhood, a point of importance in both diagnosis and treatment. The lower dorsal and dorso-lumbar vertebræ are especially commonly attacked. Common predisposing causes are a tuberculous family history, infectious fevers, especially measles, and trauma. There is usually a latent premonitory period characterised by malaise, irritability, easy fatigue, general discomfort with absence of localised pain, cachexia, loss of appetite, and slight pyrexia. Sometimes an abscess forms without pain.

Early signs are the attitude and gait of the patient. Thus when resting the child may lean against some object, occasionally preferring to rest in the ventral position; he may support his hands on his thighs when standing or hold his head if the cervical region is attacked. Squaring of the shoulders, lateral deviation of the head, stiffness in walking or stooping, lordosis, and flexion of the thighs are not uncommon. Muscular spasm and rigidity are usually early marked features, and that before deformity arises. The gait is characteristically guarded, especially in disease in the dorsal region. Pain may be indefinite or absent or referred—e.g., pain at back of head, down arms, intercostal or stomach-ache, or growing pain in legs. It is usually subacute, but at times may be very severe. Occasionally it is starting in character. Pain may usually be elicited by pressure, especially on the transverse processes of the affected vertebræ. Jarring of the head, riding on a rough road, or even walking may cause discomfort or sometimes severe pain. Later angular curvature develops. The first signs may be abscess formation or paraplegia. Early X ray examination should be made in suspected cases. The importance of early recognition—i.e., before deformity arises—and early strict and adequate treatment cannot be too strongly emphasised.

It will be convenient to discuss treatment of tuberculous spinal caries under the headings of General, Local, and Adjuvant. Of these, local measures may be considered as supremely essential, while all are desirable.

### *General Treatment.*

General treatment is concerned with considerations of climate, district, altitude, atmospheric conditions, diet, hygiene, educational and disciplinary measures, all of which deserve attention. Treatment in the country or at the seaside is to be preferred to treatment in towns. A mild but bracing climate is advocated, in a district remote from rivers or swampy grounds, and where the patient may remain out of doors during the greater period of the year. Institutional treatment in a suitable locality is better than treatment at the patient's own home, because constant skilled supervision is more readily obtainable, and also because the patient has the advantage of congenial companionship combined with suitable disciplinary and educational measures. Regular occupation adapted to the needs of a patient condemned to prolonged treatment is of the greatest moral benefit; association with cheerful companions who are themselves progressing towards a cure is encouraging, and helps the patient to realise that prolonged treatment is quite essential, even though he may feel well able to return to a life of normal activity. In this country treatment south of the Thames is preferable to treatment elsewhere, because the climate is milder, outdoor treatment can be more easily obtained, and more sunshine is available. Inland treatment on the chalk downs, at a moderate elevation, is particularly good. Margate and the Isle of Thanet generally have achieved well-deserved popularity because of their bracing character and low rainfall. The southern coast of England is also valuable because of its high sunshine record, but the absence of chalk sub-soil on the coast and greater humidity renders the districts west of Portland less suitable than districts further east. In the winter months treatment in Switzerland at such places as Leysin is popular, the dry, clear air and high sunshine-value having many advocates. Generally it may be said that very young, elderly, or toxæmic patients are best treated inland. In patients responding well, with good physique and good reacting power, marine or mountain treatment accelerates the cure. In the majority of cases combined alternating inland and marine treatment is ideal.

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[1] THE LANCET, Jan. 30th, 1926, p. 214.

### *Local Treatment.*

Local treatment includes orthopædic measures which aim at the prevention or correction of deformity (as far as is possible in a tuberculous patient), and those surgical manœuvres which complications may necessitate. In acute or progressive caries of the spine three desiderata are called for: (1) dorsal recumbency to ensure rest of the body, (2) immobilisation of the spine, and frequently (3) hyperextension at the site of the disease to prevent the onset of deformity or reduce moderate deformity which may have arisen, and to relieve muscular spasm. Hyperextension is essential in dorsal and lumbar caries if deformity is to be avoided with any certainty. These essentials may be obtained in a variety of ways, of which the one especially favoured by me is the employment of the Berck board and jacket. A Bradford frame is also an admirable apparatus, largely employed in America, and increasingly so in this country. Pugh's frame, which is more elaborate, is very efficient. A plaster bed or a double Thomas splint has numerous advocates, but neither is so readily adaptable to the varying needs of patients, nor can varying hyperextension of the spine be so easily secured with these. In cervical caries the head and neck are usually immobilised by sandbags, but a plaster bed including the head and neck, a high plaster jacket or a box splint for the head with spinal board combined are more efficient. Recumbency with immobilisation should be continued until clinical signs of activity have disappeared and skiagrams indicate recalcification and increased clearness of outline of the affected vertebral bodies. Where paraplegia complicates the condition, head and leg extension is frequently indicated in addition, and often assistance is obtained by the occasional use of counter-irritants, as mustard plasters, at the site of the disease. If within three months the signs of paralysis have not notably abated, some decompression operation, such as aspiration of an abscess through an intervertebral foramen (Calvé's operation), laminectomy or costotransversectomy, should be considered.

Considerable interest has been evoked during recent years by operations devised for the immobilisation of the spinal lesion. Of these, Albee's bone-grafting operation or a modification thereof is most often employed. It is generally agreed that such operations are rarely desirable in children, but may sometimes be usefully employed in adults. Even after these surgical procedures rigorous immobilisation for a prolonged period is essential if satisfactory results are to be obtained.

When dorsal recumbency is no longer indicated, it will be found advantageous to treat the patient in the ventrally recumbent position for increasing periods during the day, fixing his pelvis, placing a wedge-shaped pillow under the thorax, and encouraging voluntary dorsiflexion of the spine. This associated with fresh air and sunlight improves the dorsal musculature, and is of great value in lessening any subsequent tendency to deformity. When ambulatory treatment is commenced an initial period of three months or more fixation in a well-moulded plaster-of-Paris jacket provided with a large ventral window is of value, particularly if many vertebral bodies are affected. Subsequently a removable splint which will counteract the tendency to forward flexion of the spine and afford the spine protection is advocated. Such a splint may be constructed on a cast of the patient's spine, of celluloid or moulded leather, or else a brace, such as Taylor's or a modification thereof, may be employed. Personally I advocate a well-moulded celluloid jacket as most suitable. In cervical or cervico-dorsal caries a jury-mast or occipital and mandibular support may be needed in addition. Poroplastic jackets are hot, clumsy, and not very efficient. In cases of very marked deformity more elaborate measures for reduction of deformity than those described may be indicated.

### *Tuberculous Abscesses.*

A common complication in tuberculous disease of the spine is abscess formation. Such tuberculous abscesses will sometimes absorb or calcify with efficient immobilisation. More frequently they tend to increase in size and should then be aspirated, with due antiseptic precautions, as soon as that is possible. Their spontaneous opening should always be prevented. Neither should they be evacuated by open operation if that can be avoided, as sinus formation and subsequent secondary infection is so frequent a sequela. The common situations for such complicating abscesses are in the iliac fossæ or in the dorsal or lumbar regions. In aspirating a psoas abscess the skin should be pushed inwards with the fingers of the left hand and the abscess grasped between the fingers and the ilium, on the outer side of which the thumb is firmly pressed. The trocar and cannula is then inserted just outside the iliac crest and passed into the abscess. The pus is then withdrawn by means of a special Record syringe. When the abscess has been emptied the aspiration puncture is sealed with gauze and collodion. The operation may have to be frequently repeated, but usually two to four aspirations suffice.

### *Adjuvant Measures.*

Adjuvant measures of treatment include heliotherapy, artificial light treatment, aerotherapy, balneotherapy, vaccine therapy, &c. Of these, heliotherapy and artificial light treatment and aerotherapy have attracted much attention recently, and when judiciously employed are of undoubted help and value. Graduated sun treatment should be utilised whenever possible, assisted by or associated with artificial light when natural sunlight is not procurable. Such treatment accelerates the cure, increases the resistance of the patient to disease, diminishes the tendency to abscess formation, hastens recalcification, and often aids in the healing of sinuses if such exist. Exposure of the nude skin to cold air increases metabolic activity, and the combination of these adjuvant measures, especially when associated with sea-bathing in suitably selected cases, has a notable effect in toning up the patient and assisting in his cure. Vaccines are helpful in the treatment of sinuses recently secondarily infected, but in old chronic sinuses are of little value. Tuberculin has proved disappointing.

HENRY GAUVAIN, M.D., M.Ch. Camb.,
Medical Superintendent of the Lord Mayor Treloar
Cripples' Hospitals and College, Alton, and
Hayling Island, Hants, and of the
Morland Clinics, Alton.

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FOREIGN DECORATION.—Dr. A. Granville, C.M.G., C.B.E., late President of the Quarantine Board of Egypt, has been granted by the King licence and authority to wear the Order of Ismail (Insignia of the Second Class), which has been conferred upon him by the King of Egypt in recognition of valuable services rendered.

# Special Articles.

## AN ATTEMPT TO PROVIDE A STANDARD DEATH-RATE FOR BRITISH MERCHANT SEAMEN.

BY FLEET SURGEON W. E. HOME.

### PART II.*

IN our endeavour to discover a standard death-rate for British merchant seamen in 1921 we have, so far, no figures from the Registrar-General to help us, but only those of the Board of Trade's Returns, which tell us the deaths that occurred on board and soon after discharge, but do not deal with those that happen later.

In our search we must first (1) follow the Registrar-General's method and get from the Returns for 1920, 1921, and 1922, an average of the deaths that occurred to seamen in their ships. Then (2) we get the number and ages of the seamen from the Board of Trade's Census of Seamen. Next (3) we find the average number of deaths, for the same years, of "All Males (England and Wales)" at their various ages, 15 to 70, rearrange these (4) to suit the grouping of ages in the Census of Seamen, and calculate the death-rates for each group. Then (5) we can find out the deaths to be expected from a population of the same number and with the same age distribution as the seamen, and at the average rates for "All Males, E. and W.," from all causes and from specified diseases and from accidents, when, comparing those due with those that occurred, we shall have some idea whether seamen, in their ships, have a mortality greater or less than the general male population, and in what degree. These are the principles of the tables that follow.

Table I. is extracted from the Returns for 1920–22, the figures being slightly rearranged when necessary. Deaths stated as in part attributable to drink are noted as due to alcohol, and the accidents are distributed into three classes, for which the Returns give facility, according as they result from casualties to ships, accidents on board, or accidents on shore. The total deaths are not so many as in earlier years (1901), injuries are many less, in part because there are so many fewer sailing ships.

Table II. is not printed separately as it is in fact the second column of Table V., showing the age-grouping of the British seamen enumerated (90,025) in the Census; as is remarked in the Return, this was taken in the middle of the coal strike (1921), and the number is less than the year's average; in order that the death-rate may not be stated too high, 100,000 has been taken as the figure representing the average number employed daily throughout 1921, in which year two million fewer tons of British shipping were cleared than in 1920.

Table III. gives the number of "All Males, E. and W.," in five-year periods from 15 to 70, and the three-year average of deaths in each group from certain specified and from all causes, and to the right, for each age-group, the deduced death-rate.

Table IV. shows the figures of Table III. rearranged to correspond with the age-grouping of the Census of Seamen, and the appropriate death-rates for "All Males, E. and W." when so grouped.

Table V. states the age-grouping reported in the Census of Seamen among the 90,025 seamen enumerated, and in the next column the numbers there would be at each age among 100,000; next, under each cause of death there are, to the left the death-rate (All Males, E. and W., from Table IV.) appropriate to each age-group, and to the right the deaths that would have been expected from the group accordingly. These deaths are summed up below, and the totals, being the deaths of each sort expected among 100,000 men, are 100 times the death-rate from each cause, and that death-rate is the standard death-rate we set out to find, being the number of deaths from each cause and from all causes that would be likely to occur among 1000 men of the ages seamen are, had their risk been that of the vast majority of Englishmen, those who live and work in England and Wales and are included in the Registrar-General's great group, "All Males, E. and W.," numbering about 12 million men.

But how many British seamen were there really, and how many were their deaths? The Board of Trade's Census of seamen, taken on June 19th, 1921, gives 90,000; the Board of Trade, in relation to its annual return, estimates them at 173,000; the Seamen's National Insurance Society puts the figure at about 138,000; while the National Sailors' and Firemen's Union thinks the figure should be about midway, more precisely they put it at 117,000; let us take the convenient 120,000 as the average number employed daily in 1921. What, then, about their deaths? They were in all 805 by Table I., and that is 90 per cent. of the average (950), so all the other averaged figures of deaths must be reduced by one-ninth to show deaths in 1921, when there were fewer deaths because fewer men were employed.

We have already seen in Table V. the deaths that would have to be expected among 100,000 seamen—a hundred times their standard death-rate—and these, multiplied by 1·2 (or a fifth added), give the deaths to be expected, at standard rates, among 120,000 seamen, which appear on the next line in the table. On the next line below that are the deaths that actually occurred among 120,000 seamen, distributed among diseases as was usual in the three years 1920, 1921, and 1922. The excess or defect from the expected is set out in the two lines below, whence we learn that employed British seamen in and about 1921, men we always suppose splendidly physically fit, had a death-rate from all causes 12 per cent. higher than "All Males, England and Wales," 10 times higher from enteric fever, 16 times higher from malaria, 180 times higher from small-pox, 50 times higher from alcohol, a dozen times from homicide, nearly double from suicide, and seven or eight times as great from accidents. On the other hand, for pneumonia, and "tubercle, other," their rate is less, five-sevenths, and from tubercle of the lung, only a fifteenth.

The standard death-rate for seamen was 6·485, but the actual death-rate of seamen employed on board ships was 7·20 per 1000, 12 per cent. greater, and, as we have seen, these figures take no account of men dying of disease or accident after discharge from their ships, even if the cause of their death had begun to operate before that discharge. In default of further information, which it is doubtful if any agency other than the Ministry of Health could collect, and that only after some years, the true death-rate of merchant seamen, even in their ships, cannot be exactly stated. In the endeavour to find an approximate figure some arithmetical calculation is necessary. In 1901 the death-rate for British merchant seamen by the Board of Trade's Return was, as we have seen, 13·72—the Registrar-General put it at 21·47. There is in 1921 a great reduction in the Board of Trade's figures, and the death-rate appropriate has become 7·20—a reduction of 48 per cent. The Registrar-General's table for 1921, when it appears, will not show a reduction so great; he deals with older men on whom the improvement in conditions on board ships will produce less effect, and whom the reduction in sailing ships and the accidents therefrom arising do not concern. Therefore his death-rate for seamen will not be so much lowered as will that extracted from the Board of Trade's Returns; let us allow him half of the improvement, from 100 to 76, that will bring down his death-rate for seamen from 21·47 to 16·17. The average then of his and of the Return's death-rates (their populations are sufficiently near) will be 11·68, which, in default of a better, is submitted as the most reasonable approximation to the true death-rate of British merchant seamen, in contrast with

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* Part I. appeared in THE LANCET of April 17th, p. 828.

TABLE I.—CAUSES OF DEATHS OF BRITISH SAILORS IN THE MERCANTILE MARINE, 1920–22.

| — | 1920. | 1921. | 1922. | Total. | Average. |
|---|---|---|---|---|---|
| Cholera | 4 | 6 | 3 | 13 | 4·3 |
| Dysentery | 11 | 11 | 7 | 29 | 9·6 |
| Enteric fever | 34 | 27 | 19 | 80 | 26·6 |
| Influenza | 21 | 2 | 10 | 33 | 11 |
| Malaria | 30 | 40 | 26 | 96 | 32 |
| Plague | — | 1 | 1 | 2 | 0·6 |
| Pneumonia | 67 | 56 | 41 | 164 | 54·6 |
| Small-pox | 8 | 4 | 3 | 15 | 5 |
| Tuberculosis, all | 29 | 19 | 34 | 82 | 27·3 |
| " lung | 17 | 7 | 12 | 36 | 12 |
| Venereal disease | — | — | — | — | — |
| Yellow fever | 1 | — | — | 1 | 0·3 |
| Other infective | 19 | 12 | 20 | 51 | 17 |
| Beri-beri | — | — | — | — | — |
| Cancer | 6 | 2 | 5 | 13 | 4·3 |
| Other general | 3 | — | 7 | 10 | 3·3 |
| Diseases of the— |  |  |  |  |  |
| Nervous system | 47 | 28 | 34 | 109 | 36·3 |
| Circulatory | 76 | 55 | 57 | 188 | 62·6 |
| Respiratory | 21 | 15 | 15 | 51 | 17 |
| Digestive | 63 | 38 | 38 | 139 | 46·3 |
| Urinary | 28 | 21 | 19 | 68 | 22·6 |
| Other, unknown, &c. | 26 | 18 | 23 | 69 | 23 |

| — | 1920. | 1921. | 1922. | Total. | Average. |
|---|---|---|---|---|---|
| Alcohol, acute | 8 | 10 | 4 | 22 | 7·3 |
| " disease | 2 | — | — | 2 | 0·6 |
| " homicide }<br>" suicide } | 2 | 3 | 2 | 7 | 2·3 |
| " accidents | 47 | 29 | 31 | 107 | 35·6 |
| Heat-stroke | 25 | 14 | 10 | 49 | 16·3 |
| Homicide | 10 | 11 | 5 | 26 | 8·6 |
| Suicide | 30 | 30 | 30 | 90 | 30 |
| Casualties to ships | 116 | 174 | 224 | 514 | 171·3 |
| " on board | 161 | 143 | 153 | 457 | 152·3 |
| " ashore | 127 | 89 | 113 | 329 | 109·6 |
| — | 1039 | 865 | 946 | 2850 | 950 |
| Alcohol | 59 | 42 | 37 | 138 | 46 |
| Disease | 511 | 362 | 374 | 1247 | 415·6 |
| Accidents | 469 | 461 | 535 | 1465 | 488·3 |
| — | 1039 | 865 | 946 | 2850 | 950 |

TABLE II.—Ages of merchant seamen not printed here. See second column of Table V.

TABLE III.—CAUSES OF DEATH, "ALL MALES, ENGLAND AND WALES," 15–70; AVERAGE OF THREE YEARS, 1920–22.

| Age. | Population. | Enteric. |  | Malaria. |  | Pneumonia. |  | Small-pox. |  | Tuberculosis. |  |  |  | Alcohol. |  | Homicide. |  | Suicide. |  | Accident. |  | Total. |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  | All. |  | Lung. |  |  |  |  |  |  |  |  |  |  |  |
|  |  | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R |
| 15–20 | 1,727,823 | 38 | 0·022 | 1 | 0·0006 | 393 | 0·227 | — | — | 1,637 | 0·947 | 1,212 | 0·70 | — | — | 4 | 0·002 | 47 | 0·03 | 630 | 0·36 | 4,901 | 2·84 |
| 20–25 | 1,448,385 | 34 | 0·020 | 19 | 0·013 | 441 | 0·306 | ⅓ | 0·0002 | 2,285 | 1·577 | 2,004 | 1·38 | ⅓ | 0·0002 | 7 | 0·005 | 95 | 0·06 | 604 | 0·42 | 5,447 | 3·76 |
| 25–30 | 1,330,960 | 23 | 0·013 | 28 | 0·021 | 522 | 0·390 | — | — | 2,020 | 1·507 | 1,817 | 1·36 | 3 | 0·002 | 2 | 0·001 | 109 | 0·08 | 529 | 0·39 | 5,418 | 4·04 |
| 30–35 | 1,281,320 | 25 | 0·019 | 32 | 0·026 | 675 | 0·527 | ⅔ | 0·0004 | 2,005 | 1·565 | 1,842 | 1·44 | 4 | 0·003 | 8 | 0·006 | 146 | 0·11 | 530 | 0·41 | 6,133 | 4·79 |
| 35–40 | 1,273,321 | 28 | 0·022 | 29 | 0·023 | 857 | 0·673 | 1 | 0·0008 | 2,239 | 1·758 | 2,098 | 1·65 | 15 | 0·012 | 9 | 0·007 | 219 | 0·17 | 597 | 0·47 | 7,755 | 6·10 |
| 40–45 | 1,223,051 | 23 | 0·018 | 20 | 0·016 | 993 | 0·812 | ⅓ | 0·0002 | 2,273 | 1·859 | 2,124 | 1·74 | 16 | 0·013 | 7 | 0·006 | 261 | 0·21 | 640 | 0·53 | 9·248 | 7·56 |
| 45–50 | 1,162,158 | 25 | 0·021 | 15 | 0·013 | 1,105 | 0·951 | 2⅓ | 0·0023 | 2,157 | 1·856 | 2,018 | 1·74 | 20 | 0·017 | 9 | 0·008 | 341 | 0·29 | 708 | 0·61 | 11,485 | 9·88 |
| 50–55 | 971,021 | 16 | 0·016 | 7 | 0·007 | 1,086 | 1·119 | ⅔ | 0·0007 | 1,739 | 1·792 | 1,629 | 1·68 | 19 | 0·020 | 8 | 0·008 | 347 | 0·36 | 711 | 0·73 | 13,587 | 14·00 |
| 55–60 | 781,608 | 16 | 0·020 | 2 | 0·002 | 1,133 | 1·450 | ⅔ | 0·0008 | 1,314 | 1·681 | 1,210 | 1·56 | 17 | 0·022 | 5 | 0·006 | 328 | 0·42 | 679 | 0·87 | 16,080 | 20·57 |
| 60–65 | 601,235 | 8 | 0·013 | 2 | 0·003 | 1,137 | 1·891 | ⅓ | 0·0005 | 914 | 1·520 | 843 | 1·40 | 10 | 0·016 | 3 | 0·005 | 305 | 0·51 | 609 | 1·01 | 18,558 | 30·88 |
| 65–70 | 449,363 | 10 | 0·022 | 4 | 0·009 | 1,160 | 2·610 | 1⅓ | 0·003 | 553 | 1·244 | 491 | 1·10 | 5 | 0·011 | 1 | 0·002 | 230 | 0·52 | 499 | 1·12 | 21,303 | 47·94 |
| Totals | 12,259,248 | 246 | 0·020 | 159 | 0·013 | 9,505 | 0·775 | 7⅔ | 0·0006 | 19,136 | 1·561 | 17,297 | 1·41 | 110 | 0·009 | 63 | 0·005 | 2,428 | 0·20 | 6,745 | 0·55 | 119,815 | 9·79 |

TABLE IV.—CAUSES OF DEATH, "ALL MALES, ENGLAND AND WALES," 15–70; AVERAGE OF THREE YEARS, 1920–22. REARRANGED IN GROUPING OF AGES AS IN CENSUS OF SEAMEN, JUNE 19TH, 1921.

| Ages. | Population. | Enteric. |  | Malaria. |  | Pneumonia. |  | Small-pox. |  | Tuberculosis. |  |  |  | Alcohol. |  | Homicide. |  | Suicide. |  | Accident. |  | All causes. |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  | All. |  | Lung. |  |  |  |  |  |  |  |  |  |  |  |
|  |  | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. | No. | D.R. |
| 15–20 | 1,727,823 | 38 | 0·022 | 1 | 0·0006 | 393 | 0·227 | — | — | 1,637 | 0·95 | 1,212 | 0·70 | — | — | 4 | 0·002 | 47 | 0·027 | 630 | 0·36 | 4,901 | 2·84 |
| 20–25 | 1,448,385 | 34 | 0·023 | 19 | 0·013 | 441 | 0·306 | ⅓ | 0·0002 | 2,285 | 1·58 | 2,004 | 1·38 | ⅓ | 0·0002 | 7 | 0·005 | 95 | 0·065 | 604 | 0·42 | 5,447 | 3·76 |
| 25–35 | 2,621,820 | 48 | 0·018 | 60 | 0·023 | 1,197 | 0·457 | ⅔ | 0·0002 | 4,025 | 1·53 | 3,659 | 1·40 | 7 | 0·0027 | 10 | 0·004 | 255 | 0·097 | 1,059 | 0·40 | 11,551 | 4·41 |
| 35–45 | 2,496,375 | 51 | 0·021 | 49 | 0·020 | 1,850 | 0·741 | 1⅓ | 0·0005 | 4,512 | 1·81 | 4,222 | 1·70 | 31 | 0·012 | 16 | 0·006 | 480 | 0·197 | 1,240 | 0·50 | 17,003 | 6·81 |
| 45–55 | 2,133,179 | 41 | 0·019 | 22 | 0·010 | 2,191 | 1·026 | 3 | 0·0014 | 3,896 | 1·83 | 3,647 | 1·71 | 39 | 0·018 | 17 | 0·008 | 688 | 0·322 | 1,419 | 0·66 | 25,072 | 11·75 |
| 55–60 | 781,608 | 16 | 0·020 | 2 | 0·002 | 1,133 | 1·450 | ⅔ | 0·0008 | 1,314 | 1·68 | 1,210 | 1·56 | 17 | 0·022 | 5 | 0·006 | 328 | 0·420 | 679 | 0·87 | 16,080 | 20·57 |
| 60–65 | 601,235 | 8 | 0·013 | 2 | 0·003 | 1,137 | 1·891 | ⅓ | 0·0005 | 914 | 1·52 | 843 | 1·40 | 10 | 0·016 | 3 | 0·005 | 305 | 0·507 | 609 | 1·01 | 18,558 | 30·88 |
| 65–70 | 449,363 | 10 | 0·022 | 4 | 0·009 | 1,160 | 2·610 | 1⅓ | 0·003 | 553 | 1·24 | 491 | 1·10 | 5 | 0·011 | 1 | 0·002 | 230 | 0·517 | 499 | 1·12 | 21,303 | 47·94 |
| Totals | 12,259,248 | 246 | 0·020 | 159 | 0·013 | 9,505 | 0·775 | 7⅔ | 0·0006 | 19,136 | 1·56 | 17,297 | 1·41 | 110 | 0·009 | 63 | 0·005 | 2,428 | 0·198 | 6,745 | 0·55 | 119,815 | 9·79 |

TABLE V.—DEATHS EXPECTED AMONG 100,000 BRITISH MERCHANT SEAMEN AT THE AGES OF THE CENSUS OF SEAMEN (JUNE 10TH, 1921) AT THE AVERAGE RATES OBTAINING AMONG "ALL MALES (ENGLAND AND WALES)" IN THE THREE YEARS 1920, 1921, 1922; ALSO THOSE THAT OCCURRED.

| Ages | Numbers by Census (really Table II.) | Population adjusted | Enteric | | Malaria. | | Pneumonia. | | Small pox. | | Tuberculosis. | | | | Alcohol. | | Homicide | | Suicide. | | Accident. | | All causes. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Lung. | | Other | | | | | | | | | | | |
| | | | D R. | No | D R. | No | D R. | No | D R. | No | D R. | No | D R. | No. | D R. | No | D R. | No | D R. | No | D R. | No. | D R. | No |
| 15–20 | 10,750 | 11,272 | 0·02 | 0·22 | 0·0000 | 0·01 | 0·23 | 2·59 | — | — | 0·70 | 7·89 | 0·25 | 2·77 | — | — | 0·002 | 0·022 | 0·027 | 0·03 | 0·36 | 4·00 | 2·84 | 32·01 |
| 20–25 | 18,712 | 10,620 | 0·02 | 0·30 | 0·013 | 0·25 | 0·31 | 6·08 | 0·0002 | 0·004 | 1·38 | 27·10 | 0·20 | 3·85 | 0·0002 | 0·004 | 0·005 | 0·098 | 0·065 | 1·27 | 0·42 | 8·21 | 3·76 | 73·77 |
| 25–35 | 30,550 | 32,032 | 0·02 | 0·64 | 0·022 | 0·74 | 0·40 | 14·73 | 0·0002 | 0·006 | 1·40 | 14·71 | 0·13 | 4·48 | 0·0027 | 0·086 | 0·004 | 0·128 | 0·007 | 3·11 | 0·40 | 12·81 | 4·41 | 141·36 |
| 35–45 | 19,808 | 20,709 | 0·02 | 0·41 | 0·020 | 0·41 | 0·74 | 15·37 | 0·0005 | 0·010 | 1·70 | 35·08 | 0·11 | 2·41 | 0·012 | 0·25 | 0·006 | 0·125 | 0·197 | 4·09 | 0·50 | 10·38 | 6·81 | 141·44 |
| 45–55 | 11,414 | 11,968 | 0·02 | 0·24 | 0·010 | 0·12 | 1·03 | 12·58 | 0·0001 | 0·005 | 1·71 | 20·29 | 0·12 | 1·00 | 0·018 | 0·21 | 0·008 | 0·096 | 0·322 | 3·85 | 0·66 | 7·90 | 11·75 | 140·63 |
| 55–60 | 2,548 | 2,471 | 0·02 | 0·05 | 0·002 | 0·005 | 1·45 | 3·57 | 0·0008 | 0·002 | 1·56 | 4·16 | 0·12 | 0·32 | 0·023 | 0·06 | 0·006 | 0·016 | 0·420 | 1·12 | 0·87 | 2·32 | 30·57 | 51·95 |
| 60–65 | 1,150 | 1,205 | 0·01 | 0·01 | 0·003 | 0·004 | 1·89 | 2·27 | 0·0005 | 0·0000 | 1·40 | 1·66 | 0·12 | 0·14 | 0·016 | 0·02 | 0·005 | 0·006 | 0·507 | 0·61 | 1·01 | 1·22 | 30·88 | 37·15 |
| over 65 | 412 | 163 | 0·02 | 0·01 | 0·009 | 0·004 | 2·01 | 1·21 | 0·003 | 0·001 | 1·10 | 0·50 | 0·14 | 0·06 | 0·011 | 0·005 | 0·002 | 0·001 | 0·517 | 0·24 | 1·12 | 0·62 | 47·94 | 22·19 |
| Not stated | 651 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | 94·025 | 100,000 | | | | | | | | | | | | | | | | | | | | | | |
| Deaths expected among 100,000 seamen* | | | — | 1·97 | — | 1·513 | — | 58·70 | — | 0·0286 | — | 141·39 | — | 15·03 | — | 0·635 | — | 0·402 | — | 14·32 | — | 47·45 | — | 643·50 |
| Deaths expected | 120,000 seamen | | — | 2·3 | — | 1·8 | — | 70 | — | 0·034 | — | 170 | — | 10 | — | 0·70 | — | 0·0 | — | 17 | — | 57 | — | 772 |
| ,, occurred | | | — | 24 | — | 29 | — | 49 | — | 4·5 | — | 11 | — | 13 | — | 41 | — | 7·7 | — | 27 | — | 430 | — | 865 |
| Deaths of seamen on their ships | excess | | — | 10 T | — | 16 T | — | — | — | 130 T | — | — | — | — | — | 54 T | — | 13 T | — | 1½ T | — | 7·7 T | — | 12 % |
| | defect | | — | — | — | — | — | 5/7 | — | — | — | 1/15 | — | 6/7 | — | — | — | — | — | — | — | — | — | — |

* These totals are 100 times the standard death rate for merchant seamen. T = Times.

0·435, their "*expected*" *death-rate, which represents* the much slower rate at which they would have died had they remained at work ashore instead of going to sea. In other words, they appear to die, between 15 and 70, nearly twice as fast (11·68) as their brethren of the same ages (6·43) in the general civil population. The death-rate of the Army in 1921 was 4·82, of the Royal Navy 3·58, and of the Royal Air Force 4·7.

This figure is no doubt in some degree an estimate, but perhaps no merely destructive criticism of details should be put forward, for it is submitted to the profession as not altogether unreasonable. It is submitted also that anyone dissatisfied, and thinking it worth while to say so, should produce a figure of his own and tell us how and why he chose it. That there should be an industry employing annually about 200,000 men under the British flag (say, 140,000 British, 10,000 foreigners, 50,000 lascars), as many men as there are in the British Army, and that the Government Department under which they work cannot give us a death-rate for them, and in years and years has never put out any important information about their health, can hardly be considered a credit to the Department concerned, the Board of Trade. The Board's lightly borne responsibilities in this relation should be taken over (as the Royal Sanitary Institute has asked in each of these two last years, after its congresses held at Liverpool in 1924 and last year at Edinburgh) by the Ministry of Health, when *they would be discharged with satisfaction to the* profession, and with new benefits to the seamen, who deserve them.

# INTERNATIONAL SURGICAL CONGRESS,

## ROME, APRIL 6TH–10TH.

(*FROM OUR OWN CORRESPONDENT.*)

THE seventh Congress of the International Society of Surgery opened at Rome on April 6th under the patronage of H.M. the King of Italy and the presidency of Dr. DAVID GIORDANO (Venice); 306 members attended coming from all parts of the world, and there were 45 British representatives. The proceedings opened with the laying of a wreath on behalf of the Congress on the grave of the Unknown Italian Soldier. Then followed the inaugural meeting in the beautiful salon of the Capitol, presided over by H.E. Signor Benito Mussolini, in the unavoidable absence of the King. The meeting was animated and crowded; addresses were delivered by Signor Mussolini, by the Governor of Rome, Signor Cremonesi, by the President of the International Committee of the Congress, Prof. C. Willems (Liège), by Dr. Giordano, and by the General Secretary, Dr. L. Mayer (Brussels).

Signor MUSSOLINI in his address expressed the welcome of the Italian Government and spoke of the quality of mind and energy of character which must guide the work of the surgeon's hand. He claimed that the art of surgery first rose to the dignity of a science on Italian soil and spoke of the School of Salerno and the four master surgeons who arose from that school—Andrea Vesalio, Wurtzius, Paracelsus, and Ambrois Paré. He referred to his personal experience of the skill of surgeons in the war and said that, while soldiers may rest, there can be no rest from the war upon disease. A final word of cordial greeting concluded an eloquent address. The end of the gathering was marred by the untoward incident which I recorded last week. The excitement in Rome during the rest of the day was intense, and there was a great display of national flags and many processions. The Congress at its *first meeting passed a resolution of great sympathy with Signor* Mussolini.

### *Scientific Sessions.*

The scientific sessions of the Congress were held in the library of the Royal Academy of Medicine at the Policlinico in Via Umberto I. The Policlinico, a well-designed series of pavilions connected by corridors, is the principal hospital of Rome and contains about 1000 beds. The first session was devoted to a discussion on the Treatment of Uterine Cancer in which many speakers took part. Mr. S. Forsdike (London) gave his experience of radium treatment, and the general opinion seemed to be that where radical operation is impossible, radium and deep X ray therapy, both according to modern technique, are of great benefit. At the second session, on the afternoon of April 8th, the subject of discussion was the Treatment of Cerebral Tumours. Opening papers, either read or circulated, emphasised the value of early diagnosis and accurate localisation. Careful primary hæmostasis was insisted on and some speakers condemned "tourniquet" methods. The statistics of Mr. Percy Sargent (London) showed the most favourable operative results in cases of endothelioma; 19 successes in 31 cases of ablation. Dr. de Martel (Paris) referred to the value of ventrilography. Many speakers advocated local anæsthesia. At this session a paper was read by Dr. A. W. Adson (Mayo Clinic) on trigeminal neuralgia. He advocated a straight incision, showed how the motor root could be preserved, and concluded with a cinematograph film showing the sufferings of patients with trigeminal neuralgia. In the general discussion Mr. H. S. Souttar (London) showed an ingenious instrument for opening the skull, the cutting instrument circling round a screw fixed in a trephine hole, and Mr. W. Martin (Cardiff) gave particulars of an intracranial sarcoma apparently cured by radium.

On the morning of April 9th the Congress discussed the Late Results of the Surgical Treatment of Jacksonian Epilepsy. In the opening paper Dr. R. Leriche (Strasbourg) stated his belief that the disease is due to cortical cicatrisation following contusion, and recommended excision of the scar when possible. Otherwise he found radiotherapy and measures to maintain the equilibrium of the cerebro-spinal fluid of benefit. In the discussion which followed Mr. G. Jefferson (Manchester) described his investigation of the after-results in a series of cases of head injury and threw doubt on the traumatic origin of Jacksonian epilepsy.

The subject of the morning session on April 10th was the Surgery of the Spleen. It was opened in very thorough fashion by Prof. K. Henschen (Zurich), who spoke of a large number of conditions in which splenectomy is of value. Dr. E. Beer (New York) gave operative statistics of splenectomy, showing particularly good results in chronic purpura. Prof. A. W. Sheen (Cardiff) spoke of the use of radium emanation, radon, for reducing the size of the spleen before operation. Generally the discussion indicated the increasing range and value of splenectomy. The final session on the same afternoon was on the Treatment of Abscesses of the Liver. Opening papers were read by Prof. L. Dominici (Sassari) and Dr. P. Petridis (Alexandria). The need for accurate diagnosis of the various causes of abscess was emphasised and also the value of emetine in amœbic abscesses.

All the sessions of the Congress were well attended and the difficulty of language was to some extent got over by the frequent use of lantern slides. Operations were watched in the various theatres of the Policlinico and elsewhere on the morning of April 8th. The theatre of Prof. R. Alessandri was crowded to see him do splenectomy, hysterectomy, gastrectomy for ulcer, retro-peritoneal, hydatid, and operation for hydronephrosis. The many who were present had a good view from a high gallery behind a glass screen. Spectators were interested in the use of mercurochrome solution for the skin and in a special gastric clamp. Arrangements and technique in all theatres excited admiration. Other operators were Drs. De Fabi and Margarucci at the Policlinico, Dr. Antonucci at the Ospedale San Giovanni, and Dr. Egidi at the Ospedale di S. Giacomo. At the former hospital avulsion of the phrenic nerve and cervical sympathectomy were performed. Instruments and appliances were exhibited at the Policlinico by Schaerer (Bern), Stille (Switzerland), G. Wolf (Berlin), Rizzol (Bologna), Invernizzi (Rome), and others. Operating tables, Putti's orthopædic table, mechanical bone-cutting instruments, and cystoscopes were features of the exhibition.

### *Social and Business Meetings.*

The social and sight-seeing aspects of the gathering were complete and attractive. A warm welcome and much entertainment was given by the Italian surgeons to their colleagues. On April 9th the Italian surgeons gave a motor trip to Hadrian's Villa, followed by tea and concert at Tivoli. The Congress dinner on the evening of April 10th, to which ladies were invited, was also given by the Italian surgeons and was most successful; speeches were made by delegates from all the countries. The ladies of the Italian surgeons took the visiting ladies for several interesting trips.

At the business meeting on April 9th the Polish invitation to hold the 1929 Congress at Warsaw was cordially accepted. Prof. H. Hartmann (Paris) was appointed president for the 1929 meeting. The question of readmitting German and Austrian surgeons to the Society was brought forward from Japan, and a resolution was passed in a crowded meeting, with six dissentients, which stated that "All the surgeons of the Central Powers who were members of the International Surgical Society before 1920 will be readmitted to the Society, if they accept the statutes of 1920, from the day when their respective countries join the League of Nations." The mention of the statutes. of 1920 is unimportant, merely referring to an alteration in the subscription.

The international, scientific, and national committees were reappointed. The British National Committee is composed of Mr. J. E. H. Roberts (London), Mr. Percy Sargent (London), and Prof. A. H. Burgess (Manchester), Mr. Roberts being the delegate on the International Committee. Dr. Lorthior and Dr. L. Meyer (both of Brussels) were re-elected treasurer and secretary respectively. A ballot was held to decide the subjects for the next congress and the following three were selected, it being within the powers of the Scientific Committee to add others: (1) Causes and mode of production of embolisms; (2) Results of resection of the stomach for gastric and duodenal ulcers; (3) Treatment of Basedow's disease.

The Congress was a great success throughout; the kindness and hospitality of the Italian surgeons and the attractions of Rome were much appreciated. While no outstanding surgical advance was put on record, the scientific discussions showed a high standard of aim and achievement. A final word of admiration should be written of Dr. L. Mayer (Brussels), the Secretary-General, to whose work much of the success of the Congress is due.

## PARIS.

(From our own Correspondent.)

### *Vital Statistics for 1925.*

The French statistical bureau has just issued a provisional report showing for 1925 (as compared with 1924) somewhat fewer marriages, an increase of 17,000 births, more than offset by an increase of 29,000 deaths, and total mortality increasing during the nine last months of the year. Births exceeded deaths by 60,000. The birth-rate remains practically as in 1911–13, and French mortality is higher than that of neighbouring countries.

### *Reorganisation of the Military Medical Service.*

Since the war the French Army Medical Service has confronted growing neglect and lack of enthusiasm, and the personnel is becoming insufficient. Prof. T. Tuffier, who is interesting himself in securing improvement, advocates close coöperation between civilian and military physicians, surgeons, and specialists, and insists that all young men called up for military training should receive some practical instruction in medicine and surgery. His idea is that a medical reserve should be created which can be utilised in case of need. The provision of thorough scientific training in the colonies, better pay, relatively early retirement if desired, proper pensions, and the abolition of undesirable grade distinctions are amongst other things suggested for the encouragement of candidates for the service.

### *Experimental Treatment of Sarcoma with Lead.*

To the *Comptes Rendus de la Société de Biologie* of March 20th N. Waterman contributes from the Laboratoire Anthoni van Leeuwenhoekhuis, Amsterdam, a short study of the effects of treating Rous sarcoma with lead. He used a combination of lead with unsaturated fatty acids. These soaps were only very feebly ionised, and it was difficult to get a stable emulsion. They were well tolerated by fowls on which the experiments were made, but not by rabbits, which succumbed to very small doses. The usual dose for intravenous injection was about 0·05 g. per kg. of body-weight. Chemical analysis of the organs showed a remarkably large deposit of lead in the lungs. These neoplasms, he states, generally cause death from pulmonary metastases, and it was found fowls treated with lead survived some 15–30 days longer than controls, as the metastases developed more slowly. It was noted that the tumours of the animals treated became much less virulent and that their transplantation was rarely possible after treatment. Waterman concludes that slightly ionised lead, in the form of an unsaturated soap, has an unfavourable effect on the sarcoma of Rous.

### *Conditions of Health in French Colonies.*

The League of Nations has recently been studying the subject of tuberculosis in French colonies. In general tuberculosis does not show a tendency to spread in the African colonies, except in towns where the native manner of life has been altered. Alcoholism has diminished the native resistance to the disease. In Madagascar, Tanganyika, and the Sudan tuberculosis spreads more easily among natives living in earthen huts than among those inhabiting well-ventilated dwellings of bamboo and similar material. Tuberculosis in the French colonies is reduced by fresh air, ample light, wide spaces, and physical exercise, as it is elsewhere. The League of Nations has appointed a medical mission for the study of conditions in Senegal, the Sudan, French and Portuguese Guinea, Gold Coast, Ivory Coast, Liberia, and other regions of equatorial Africa, and this mission has just sailed from Antwerp.

### *Foreigners in French Institutions.*

This vexed question continues to clamour for solution. Brandon has presented to the municipal council a plan providing for taxation of foreigners coming from countries not having sanitary conventions with France and for abrogating existing conventions which are unfavourable to France in the present situation. Varenne has pointed out that many of the foreigners are brought in by manufacturers needing workmen and that the manufacturers should share in the financial responsibilities thus created. The Director of Public Assistance has shown that no existing sanitary conventions are satisfactory with respect to the maintenance of foreigners in hospitals, homes, or asylums; these conventions provided only 972 francs for the year 1925, when the expenses incurred for foreigners amounted to 8 million francs. He believes that the best plan would be to prevent anyone with chronic or infectious disease from entering France. Plans for taxation are to be further considered.

### *Medicinal Plant Production.*

A committee, which includes representatives of several Government departments, is studying the question of utilising wild medicinal plants growing in France and promoting their cultivation. It is proposed that premiums shall be provided for yields of good quality, and the plans include effective organisation of small growers.

Dr. M. Tiffeneau, professor of chemistry in the Faculty of Sciences of the University of Paris, has been appointed professor of pharmacology at the Faculté de Médecine. He has been agrégé in pharmacology, and his work is well known, including the synthesis of seneryl and other compounds.

The nineteenth French medical congress will be held at Paris in October, 1927.

A special committee organised by the Ministry of Public Instruction is planning to provide a system of examinations for determining vocational aptitude and capacity in children.

The appearance of a few cases of small-pox in the 15th arrondissement of Paris has caused the posting of warnings and advice to utilise the free vaccination services.

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## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

### *Signed Articles in the Public Press.*

UNTIL recently the appearance in the daily press of articles on medical subjects was quite unusual, but of late years the situation has changed considerably. Editors have become aware that the public, which is accustomed to receive information on every aspect of social and scientific life, may have a legitimate objection to remaining in ignorance of medical matters. The staff of the leading papers therefore includes a medical assistant editor who gives accounts of medical events in a special column at regular intervals, reports on the proceedings of medical societies and congresses, and writes a special article whenever there is an interesting medical event. Apart from this everyday work done by the medical assistant editors, it is customary to ask eminent medical men to write signed articles on vital questions which stand in the forefront of public interest, such as birth control, prophylaxis against venereal diseases, or prohibition. The editors of the leading papers, advised by their assistant editors, take care that only medical men of high professional standing write in their columns, and exclude any who do it for the obvious purpose of advertising. Although, therefore, articles sometimes allude to particular kinds of treatment it has not hitherto been necessary to take any disciplinary action against a medical contributor to a daily paper.

### *Advice to Those About to Marry.*

The importance of a medical examination before marriage has not yet received much recognition in this country. The only measure taken by the Government has been the distribution of a pamphlet in which the advisability of a medical examination is described; this is given to betrothed persons by the registrars before publication of the banns. Recently, however, the Minister of Public Health has issued a circular letter inviting the local authorities to appoint medical men for the examination of candidates for matrimony. The law does not allow any compulsion, and people decide for themselves whether they will undergo medical examination or not. Dr. Hirsch, discussing that question in the Berlin Medical Society recently, said that matrimonial certificates must answer the question whether marriage may be dangerous to the person examined, to the other partner, or to the offspring. The certificate should state whether the proposed marriage is permanently undesirable or whether it should be merely postponed. It must, of course, be left to the discretion of the betrothed whether or not they will follow the advice. Dr. Hirsch discussed the question whether only specially appointed medical officers should be authorised to act as matrimonial advisers, and said that although the average medical man has not at present quite enough knowledge of the very difficult questions which arise, a training in the laws of heredity and in the physiology, pathology, and sociology of marriage would prepare the next medical generation for this work. In Dresden a non-official office was established some time ago by the lecturer of hygiene at the city's technical college for the purpose of advising present and former members of the college; but it had to be placed at the disposal of the general public owing to the demand. The clientèle of the office, indeed, included people of every class. Many of them came because they were aware of the great responsibility they were assuming by marriage; others because their intended wives or husbands had asked them to get a certificate. Men and women came in nearly equal numbers. The Dresden Sick Club has declared its readiness to pay the costs of matrimonial certificates given to its members.

### *German Qualifications in Roumania.*

The Senate of the University of Bucharest has decided that medical students who have studied and qualified in Germany shall undergo an especially severe examination before being allowed to practise in Roumania. It is in explanation of this step that it is made easy in Germany for Roumanian candidates to pass the examination because only very few of them intend to reside in Germany; the universities are said to have no interest in a good training of Roumanians. The association of the German medical faculties has protested against these statements, saying that the German regulations do not allow any difference to be made between foreigners and Germans, and that the individual examiner does not know whether a candidate takes his qualification with a view of residing in Germany or in his own country. The medical faculties are the more astonished by the Bucharest decision, as before the war a large number of Roumanian medical men were trained at German universities without getting into any difficulties with the authorities at home.

### *Cultivation of Spirochæta Pallida.*

Dr. Reiter lately reported to the Micro-Biological Society that he has succeeded in cultivating *Spirochæta pallida* in a fluid nutrient medium composed of rabbit serum and normal saline to which a piece of cerebral substance has been added. From the pure culture obtained he has produced a vaccine which gives a typical reaction on being injected into children suffering from florid syphilis and showing a positive Wassermann test. This reaction is absent, he found, in latent syphilis with a negative Wassermann test. He has tried the vaccine also in patients suffering from general paralysis, especially those who showed no improvement with other treatment, and the result was not only an amelioration of their general state but also the disappearance of the Wassermann reaction.

### *Anniversary of the German Surgical Association.*

The German Surgical Association this year is holding its fiftieth annual meeting; it was founded in 1872, and has met every year since except from 1915 to 1919. At the time of the foundation the number of members was only 130, of whom two are still alive, including Prof. Küster, formerly of Marburg, who attended the recent meeting notwithstanding his advanced age. The present membership is about 2300. To mark the jubilee the meeting was held with great solemnity in the assembly hall of the Langenbeck Virchow House, the common property of the German Surgical Association and the Berlin Medical Society. After a musical introduction by the Berlin Medical Orchestra, the President, Prof. Körte, read an inaugural address comparing the state of surgery at the time of the foundation of the Society with that of present days. Congratulatory addresses were then read by the presidents of the Swiss, Swedish, and Norwegian Surgical Associations, and many congratulatory letters were received from other surgical associations and individuals in every part of the world. The City of Berlin has established an endowment fund for surgical research in honour of the Association. The leading medical papers have issued special numbers, of which that of the *Deutsche Medicinische Wochenschrift* is especially remarkable because it is composed exclusively of contributions by eminent foreign surgeons. The scientific proceedings of the meeting will later be noted.

### *Hispano-American Medical Society.*

A society of the medical men of South America has lately been founded in Berlin under the name of Associacion Ibero-Americana, with the purpose of facilitating the study of medicine in Germany for medical men and students from Spain and South America and of making their stay in Berlin as agreeable as possible. It is remarkable that the diplomatic representatives in Berlin of several of the South American States are medical men. The Minister Plenipotentiary of Columbia was elected honorary president. and the Chargé d'Affaires of Salvador president of the society.

## MEDICINE AND THE LAW.

### *Verdict of Negligence against Doctor for Certifying an Alleged Lunatic.*

The legal arguments in Harnett *v.* Fisher are not available for comment at the moment of writing, but after several days' hearing before Mr. Justice Horridge a decision has been reached upon the facts. It will be recalled that in 1924 Mr. William Harnett recovered the huge sum of £25,000 damages in an action before Mr. Justice Lush against Dr. C. H. Bond, a Lunacy Commissioner, and Dr. G. H. Adam, of West Malling, on the ground of alleged wrongful detention in an asylum for nine years. The House of Lords upset the judgment a year ago. Mr. Harnett has now sued Dr. Henry H. Fisher, of Sittingbourne (who with Dr. Penfold, since deceased, originally certified him on Nov. 10th, 1912, to be a lunatic and a proper person to be taken care of and detained under care and treatment), for negligence in having so certified him. The judge left two questions of fact to the jury: (1) Was Mr. Harnett insane when certified on that date? and (2) Did Dr. Fisher exercise reasonable care in certifying him? The jury has answered both these questions in the negative and has awarded £500 damages. Of the experts called in support of the plaintiff's claim, Dr. Theophilus Hyslop said he did not consider the facts, as set out in Dr. Fisher's certificate, sufficient; he would not himself have given a certificate on those facts. The statements set out were inter alia that Mr. Harnett rambled about religious matters, thought he had a call to rescue persons in Borstal institutions and to draw everybody to Christ, and was deeply absorbed in sexual questions. Dr. Hyslop did not regard these as a safe indication of insanity, nor did he think the certificate as a whole was sufficient ground for detention in an asylum. Dr. Risien Russell gave similar evidence, and expressed the view that Dr. Fisher could not have exercised sufficient care. On the other side, Dr. Fisher was able to call a considerable body of evidence, including the magistrate (Colonel Richard Locke, D.L.), who had signed the reception order and had known Mr. Harnett all his life; Dr. G. H. Adam (defendant in the former proceedings), whose opinion of Mr. Harnett's insanity at the material date was definite; Dr. Ludford Cooper; Dr. E. S. Pasmore, who received the plaintiff into Croydon Mental Hospital in February, 1913; and Dr. J. G. P. Phillips, physician-superintendent of Bethlem Hospital. The judge seems to have expressed an opinion that Mr. Harnett, if he had ever been insane, was now thoroughly recovered. Dr. Fisher, it seems, deliberately avoided exciting Mr. Harnett at the time by cross-examination on the subject of his religious views. There were indications during the recent trial that the learned judge thought the plaintiff should have been made as excited as possible by the certifying doctor in order that there might be no doubt about his condition. The case was, of course, under our law peculiarly a case for the jury, and the jury have given a verdict which, for the present, is final; but, as Mr. Justice Horridge stated in his summing-up, if juries handle this class of case amiss, great difficulty will be found in obtaining doctors to certify patients.

Dr. Fisher stated that the case of Mr. Harnett had not been brought to his mind from the date of the certification in 1912 until some ten years later. The judge agreed that it was a hardship for a doctor to be asked to remember particular cases after so long a lapse of time. The effect of the Statute of Limitations upon the plaintiff's claim is the main legal point upon which judgment has been reserved.

*Dangerous Drugs Act Charges: Sentence of Imprisonment on Doctor Quashed on Appeal.*

Dr. S. G. Connor has successfully appealed against the sentence of six months' imprisonment inflicted upon him at Marlborough-street police-court on four summonses under the Dangerous Drugs Acts and Regulations. The police-court proceedings were mentioned in this column recently, and the sentence of £200 fine and six months in prison (there being three awards of two months' imprisonment to run consecutively) was criticised as unusually severe. On appeal to the London Sessions Dr. Connor, who had pleaded guilty to the summonses in the court below, confined himself to attacking the sentence. It was protested on his behalf that the fines were heavy enough, but that the imprisonment was not a punishment which should be imposed upon a medical man for such an offence. Admittedly the appellant did not keep his books properly, but he had used morphine in a perfectly legitimate manner for the purpose of treating drug addicts, and it was claimed that in several cases he had achieved good results. Sir Robert Wallace, chairman of the appellate tribunal, announced that the bench thought Dr Connor had been guilty of gross carelessness rather than wilful misconduct. The bench quashed the sentence of imprisonment, having regard to the whole case and to the effect of such a sentence upon a medical man.

It has been by no means uncommon for stipendiary magistrates' sentences to be reduced at sessions on appeal. It is unnecessary to discuss whether the stipendiaries have been generally too harsh or the sessions generally too lenient. But if it had been realised as likely that a medical practitioner for a first offence of this kind would receive a heavy fine and a sentence of six months' imprisonment, there would assuredly have been far stronger opposition to the details of the Dangerous Drugs legislation at its introduction.

## EXHIBITION AT THE OPTICAL CONVENTION.

THE exhibition held by the Optical Convention in London last week gave evidence of great advance by British research workers and optical traders during recent years. There has certainly been a sincere attempt by British manufacturers to rival and surpass the work of their competitors on the continent, and, judging by the exhibits at the Convention, the attempt has proved fairly successful, at any rate in so far as the accessories of medicine are concerned. The ophthalmic section shows that practically all the optical instruments likely to be required by general practitioner or specialist can be got from British firms.

The apparatus now available for tests should make it possible to ensure that a lens or lens system fulfils the requirements of the instrument to which it is to be fitted, and should definitely prevent the use of any faulty lens system. In connexion with lens testing the universal lens interferometer exhibited by the National Physical Laboratory and built for them by Messrs. Adam Helger demands special mention. The exhibition of microscopes ranging from a simple folding model by R. and J. Beck, to elaborate microscopes for research and other special purposes, was particularly interesting as a contrast to the collection of microscopes in the historical section. Possibly a great deal still remains to be done, but with the improved methods of illumination now available—a new method of surface illumination, for example, was shown by R. and J. Beck—a steady approach is being made towards the theoretical limits of microscopy.

As a source of illumination for microscopic work the K. B. B. quartz mercury-vapour lamp exhibited by the Thermal Syndicate, Ltd., of Wallsend-on-Tyne, is worth mention. This lamp provides a source of illumination of absolute steadiness and great intensity and it is under complete control. Unlike most mercury lamps, it is not a vacuum lamp, but works under atmospheric pressure, and it requires no mechanical device for starting the arc. It may be operated off a 5 ampere plug in any direct-current house supply, provided that a series resistance is adjusted to suit the voltage. The spectral lines of mercury are well known, and, when fitted with a suitable Wratten light filter, the K. B. B. luminant provides a source of monochromatic illumination specially suitable for microscopic work in the visible, using the green mercury line (λ 5461), or for microphotography using the violet line. As a source of ultraviolet radiations the lamp has much to commend it.

The exhibits of glass manufacture show distinct advance. A recently published catalogue of the oldest established British firm of glass manufacturers describes 112 varieties as against 26 listed in 1914. It is claimed, moreover, that some of these types are far superior to continental glass. The opacity to various radiations is now known with certainty, and some interesting diagrams showing the colours and the intensity transmitted by various glasses were shown. It is now possible to make sure whether a glass is suitable for any given purpose.

Ultra-violet radiations have the property of causing many substances to fluoresce, and this may be used in several ways. One of these was suggested in the section of the exhibition devoted to illusions, when in the course of demonstrations of ultra-violet radiation pictures and diagrams which, when illuminated by daylight, were quite invisible became clearly visible when illuminated by ultra-violet radiations. They may also possibly be useful in analysis, and they are employed in distinguishing genuine precious stones from imitations, and to reveal marks which apparently have been obliterated. The source of artificial light in general use nowadays is the gas-filled incandescent lamp, and this is inconvenient because it alters the more delicate colours of pictures or fabrics. Artificial daylight units go far to get over this objection to electric light Satisfactory illumination is very important, and many things are required of the ideal light Its position, the avoidance of glare, and the intensity of illumination—these are daily problems; and some form of portable photometer, such as the Holophane Lumeter exhibited by Wray, Ltd., of Bromley, Kent, should prove useful to those concerned in the prevention of eye-strain.

Demonstrations of the Fournier d'Albe Optophone by Miss Mary Jameson aroused considerable interest. This instrument is designed to enable a blind person to read an ordinarily printed book. At a demonstration Miss Jameson was able to read part of a newspaper with comparative ease, and she claims to be able to read at a rate of about 60 words per minute.

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*DONATIONS AND BEQUESTS.*—Mr. William Henry White, Earl's Court-square, S.W., left £1000 each to St. Dunstan's Hostel for the Blind and Dr. Barnardo's Homes.—Salford Royal Hospital has received a donation of £2000 and the Salford District Nurses' Home £100 from the Booth Charities. Other hospitals received £1810.—Mr. Samuel Meggitt Johnson, of Endcliffe-court, Sheffield, besides numerous other bequests, gave £1000 each to the Sheffield Royal Infirmary and the Sheffield Royal Hospital; £250 each to the Jessop Hospital for Women, Sheffield, the Children's Hospital, and the National Children's Orphanage, Sheffield; £200 each to the Totley Orphanage and to the Crookes Orphanage, Sheffield.—Mr. Walter Southwell Jones, Marylebone-road, N.W., left a reversionary bequest of about £25,000 equally between King Edward VII. Hospital, Cardiff, University College Hospital, London, Church Army, the Salvation Army, [illegible] London.

# Correspondence.

"Audi alteram partem."

## WHAT IS ORTHOPÆDIC SURGERY?

*To the Editor of* THE LANCET.

SIR,—Mr. Sampson Handley has chosen (THE LANCET, April 3rd, p. 734) to reopen the vexed question: "What is orthopædic surgery?" using as his text cases shown at the Orthopædic Section of the Royal Society of Medicine. Incidentally the illustrations chosen are singularly inappropriate to Mr. Handley's thesis. The first, Charcot's disease, is commonly treated by the use of some sort of supporting appliance, and the prescription of such an appliance is usually allowed, even by the most pedantic of general surgeons, to be part of the function of an orthopædic specialist. The second, osteomalacia in a child of 16, seems to come within the definition of "deformities arising during the process of growth." The third, secondary ovarian sarcoma of the scapula, was shown by the orthopædic surgeon to Mr. Handley's own hospital; I do not know whether it came from the orthopædic department of that hospital, or if so, by whom it was referred to that department.

But Mr. Handley's real point is something more serious. He would apparently go back to Andry's definition of orthopædics and restrict the orthopædic surgeon to the prevention of deformity in childhood. If he will read Andry's original book "Orthopædia" he will find that in this case the orthopædic surgeon should take over many of the functions of the skin specialist and of the beauty parlour. Present-day orthopædic surgeons cannot allow such a definition to stand; it is time that we stated our position quite definitely and made it clear what we do and what we intend to do.

As an orthopædic surgeon I consider that I am first a fully qualified surgeon in all branches of the subject, but finding that the whole of surgery is too large a subject to be dealt with efficiently by one man, I have given up certain large branches, notably abdominal surgery and surgery of malignant disease (excepting that of the bones), and have agreed to restrict myself to surgery of the bones, joints, muscles, and peripheral nerves, or more generally to surgery of the limbs and spine. This is the "implied bargain" that I made in taking up a specialty, and I think that it is one that is in the public interest. Mr. Handley's "implied bargain" seems to me to be in the interest, not of the public, but of the general surgeon. He would restrict the orthopædic specialty to a field so small that it could not possibly attract men with any ability or ambition. It was such a restriction that brought orthopædic specialists into disrepute 30 years ago when they were expected to confine their work to tenotomies, splinting, and the ordering of an appliance. Mr. Handley says nothing of the other side of the implied bargain. We often see the general surgeon unable to hold his hand when he has the opportunity to carry out such an orthopædic operation as an osteotomy or the correction of a hallux valgus. As a rule the actual operative procedure will then be carried out extremely well, but too often after the osteotomy the correction of the deformity and the fixation of the limb in plaster or in splints, the most important part of the operation, is left to the house surgeon. The hallux valgus is left without after-treatment, because the surgeon does not know that there is any after-treatment.

The real truth is that the general surgeon has almost ceased to exist; the nearest approach to one is to be found in the good provincial surgeon who, working in a smaller community, must be capable of carrying out all sorts of operative procedures with reasonable skill. In London most surgeons are really specialists—i.e., they possess special experience in particular branches of their work. A considerable proportion are specialists in abdominal surgery or in the surgery of malignant disease. It would be better in the interests of the public and of the profession if they would realise this and would acknowledge that there are sections of their work that they can do well and others in which they have little experience. It is not without reason that we hear so much of the work of the unqualified manipulator and bone-setter. Many of the conditions with which they deal are just those in which the orthopædic surgeon (in the present-day sense) is the only member of the profession to gain special experience. But the general surgeon pretends that he knows all about the treatment of a fracture, a sprain, or a muscle injury. Many general surgeons at the present day never handle a fracture themselves, and hardly any gain practical experience in the treatment of minor injuries. There are few orthopædic surgeons who are specialists; they would not for a moment claim that all the surgery of the limbs and spine should pass to them, but they do claim that having given up large (and incidentally remunerative) sections of surgery, they are able to gain a sounder knowledge of the remainder, and that they can thus assist their general surgical colleagues by their experience.

That there are some who think that this is true is, I think, shown by the fact that the Orthopædic Section of the Royal Society of Medicine is very well attended, and that many of those who come regularly are young general surgeons who have no intention of specialising strictly in orthopædic surgery.

I am, Sir, yours faithfully,

Portland-place, W., April 17th, 1926. R. C. ELMSLIE.

## MINERS' NYSTAGMUS: A TENTATIVE THEORY.

*To the Editor of* THE LANCET.

SIR,—In the very complete and interesting article on miners' nystagmus by Mr. G. H. Pooley in your issue of April 10th, and in many previous articles which have appeared in medical literature on this subject, I am not aware that one possible cause of the condition has been given any consideration. I refer to the lowering to great depths at very high speed of those employed in the mining industry.

One statement in Mr. Pooley's article may be utilised to emphasise what I have in mind. He writes (p. 752), ". . . labyrinthine nystagmus, and nystagmus due to cerebellar lesions we know." In diseases of the labyrinth and of the cerebellum in addition to nystagmus we usually, I believe, get vertigo—i.e., sensations of uncontrollable abnormal movements such as of a falling forwards or sideways of the body as a whole. May it not be that the order of things can be reversed and that a sudden prolonged, uncontrolled, abnormal movement of the body as a whole in a rapid vertical descent through space may set up *functional disturbances* of the labyrinth and cerebellum and so produce nystagmus? In one of the local collieries with electrical winding apparatus the depth of 880 yards is reached in 60 seconds, or a virtual fall of the human body through space at the *middle* of the descent at the rate of about 35 miles per hour. Only in the mining industries does this abnormal vertical movement of the body occur and at such a rate.

Nature, I feel sure, in the genus homo, never provided for such an upset of the body equilibrium, and therefore I suggest that the cerebellum, the labyrinth, and the closely related eye muscles are seriously upset, that the effect of this is nystagmus, and that it does not wear off daily for many hours after reaching the pit bottom. Is it surprising then that Mr. Pooley states (p. 752): "Roughly, 50 per cent. of all actual coal-getters had gross oscillation of the eyes. . . . coal-getters had traces . . ."? How many more would have had traces . . . ."? Note the "How many more." Further, be it noted that Dransart's tests for the degree of nystagmus are made in the vertical plane of eye movements corresponding to a vertical fall through space. Again I am informed that the velocity at which the men are lowered is much higher nowadays than in the 'seventies and to much greater depths. Might not this be the cause of the greater incidence in present times? If the rate at which the men are lowered is the cause of the disease, then the remedy is obvious.

There is such a pother as to whether deficient illumination or some toxic gas is the actual cause of miners' nystagmus that I humbly venture the above tentative theory, at least as a potent factor.

I am, Sir, yours faithfully,
J. PROSSER DAVIES, M.B., B.S. Lond.
Cardiff, April 16th, 1926.

## THE NEW HEALTH SOCIETY.

*To the Editor of* THE LANCET.

SIR,—We are very grateful to you for your appreciative article and kindly criticisms of the activities of the New Health Society. I am sure you will realise the aim of this Society is to reach the mass of the public who are sadly lacking in the knowledge of the *rudimentary laws of health.* The motto of the members of our Council is simplicity. We do not consider that controversial or medical questions should occupy a very prominent portion in the pages of our *Bulletin*, believing the proper place for such matters to be the pages of THE LANCET.

In the early days of health propaganda, the necessary reiteration of the four primary laws of health of the body, as so simply and lucidly put by one of our Council, as fresh air, fresh water, fresh food, and a good drainage system, must have appeared monotonous to the instructed.

We are always pleased to receive kindly criticism from a journal so justly popular, not only with the medical profession, but also with the lay public.

I am, Sir, yours faithfully,
W. ARBUTHNOT LANE,
Sentinel House, Southampton row, W.C., President.
April 16th, 1926

## DIABETES, A RECOVERABLE DISEASE.

*To the Editor of* THE LANCET.

SIR,—I should like to congratulate Dr. Chapman and Dr. Percival upon the success they have had with patients who were treated upon the lines I advocated even before insulin was available in this country. In February, 1923,[1] I expressed the view that it was not hypoglycæmia that would prove the greatest danger when insulin could be given by all who practised medicine. The real danger would be the administration of too little insulin *for the diet* prescribed; this would lead to the sugar in the blood being kept at too high a level, and the pancreas would degenerate completely.

This prophecy has proved correct and has been the experience of those who have either adopted the view expressed by Prof. H. MacLean in May, 1923,[2] that diabetes mellitus is essentially a *progressive* disease, and therefore not attempted to keep the blood of their patients below some arbitrary percentage, or who have not had the facilities to do this. In February, 1925,[3] I published curves of the rise in the sugar in the blood after intravenous injections of sugar before and after courses of insulin which had rendered the patients *hypoglycæmic* for several weeks. These demonstrated an improvement in the sugar-burning and/or storing mechanism.

Although more than 450 cases of diabetes mellitus have been treated with insulin under my supervision, I should hesitate to express definitely the view that the disease is recoverable or that it is essentially progressive. The term diabetes mellitus *is applied* to several different conditions. The proof of this lies in the fact that some patients suffering from hyperglycæmia without any ascertainable infection do not react to insulin even when it is injected in enormous doses. Again occasionally, it is true rarely, a patient who has reacted to insulin loses the power of doing so; this loss may be sudden and not due to any infection that can be recognised at an autopsy.

One should be extremely careful not to confuse the issue by *including in evidence in favour of recovery* from diabetes mellitus any case in which there has been recovery from an infection. Cases of mild hypoglycopyresis appear to be suffering from true diabetes mellitus when absorbing toxins.

I am, Sir, yours faithfully,
Portland place, W., April 14th, 1926. O. LEYTON.

## BLOOD-SUGAR IN ENCEPHALITIS.

*To the Editor of* THE LANCET.

SIR,—We have read with interest the article of Dr. McCowan and others (THE LANCET, April 17th, p. 802) on blood-sugar in encephalitis lethargica; the more so, as we have recently made similar investigations with entirely different results. *Of the five cases in which,* amongst other things, we studied the glucose tolerance, basal metabolism, and nitrogen balance, the first was of a boy recovered from the acute stage of the illness and without Parkinsonism and the other four were *Parkinsonian* in type; of these four, one showed pronounced stupor, two were typical examples of bradykinesia, and one was myoclonic. In all five the glucose tolerance, as shown by serial estimations of blood-sugar by the method of Folin and Wu, was definitely normal in type, without hyperglycæmia, and in one case (the stuporose) slightly suggestive of increased tolerance In this last case, which appears to be similar to Dr. McCowan's case whose glucose tolerance is illustrated by his Fig. 4, the flatness of our curve is in marked *contrast* to his parabola. As determination of nitrogen and basal metabolism in these cases also gave normal results, the total N output being always less than intake and the basal metabolic rate showing very little variation from normal, we feel that our findings in the matter of glucose tolerance are, in some degree, confirmed.

We are, Sir, yours faithfully,
H. S. PEMBERTON.
Liverpool, April 19th, 1926. W. D. JEANS.

## IONIC MEDICATION.

*To the Editor of* THE LANCET.

SIR,—In your annotation on Mr. Morphy's valuable paper on Ionic Medication in Dentistry, as well as in his paper, there is a point which I think should be *corrected* The term "*nascent*" should be limited to the property shown by ions as they become atoms—that is, when they are about to give up an excess charge of electrons or are about to take up *electrons to make up* a deficiency. This occurs, as the primary or secondary effect of an electric current, at the contact of ions with metal or carbon electrodes with which they are not *entering into chemical* combination. There is no evidence to show that when ions form fresh compounds in the tissues there is any action due to a "nascent" condition. I believe Mr. Morphy adopted this suggestion from the paper by Dr. David Campbell, to which he refers. Dr. Campbell in that paper used the term "nascent" for conditions to which, in my *opinion, it is not* applicable.

I am, Sir, yours faithfully,
Devonshire-place, W., April 19th, 1926. A. R. FRIEL.

## NEURITIS AND NEURALGIA.

*To the Editor of* THE LANCET.

SIR,—Your reviewer in last week's issue is "surprised to find no apparent description of, or reference to, metatarsalgia . . ." which he very kindly goes on *to say appears* to be the only neuralgic condition not described in my book. If he will turn to the last chapter on Neuro-Fibrositis, page 400, line 6, he will find the reference to *metatarsalgia which he has* overlooked.—I am, Sir, yours faithfully,

WILFRED HARRIS.
Wimpole-street, W., April 20th, 1926

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[1] Brit. Med. Jour., 1923, i., 309.
[2] THE LANCET, 1923, i., 1039.
[3] Practitioner, February, 1925.

# Obituary.

## JOHN WILLIAM SMITH, M.B. Edin., F.R.C.S. Eng., D.L.

Mr. J. W. Smith, who died at Ingleton on April 13th at the age of 61, was once a familiar figure in Manchester medical circles. He was the eldest son of Mr. Thomas Davidson Smith and was educated at the Friends' School, Lancaster, and at Lancaster Grammar School. Proceeding to the University of Edinburgh he graduated in medicine with first-class honours in 1886 and in the same year qualified as M.R.C.S. After a few months' study at Vienna he returned to England and went to Manchester in 1889 as junior demonstrator in anatomy under the late Prof. A. H. Young. His bent, however, was towards surgery, and having become F.R.C.S. in 1890 he was elected resident surgical officer at the Manchester Royal Infirmary, a post which he held for three years.

During the South African war he served for six months as honorary lieutenant in the R.A.M.C., and on his return in 1901 was elected assistant surgeon to the Manchester Royal Infirmary, becoming surgeon in 1910. Mr. Smith was also assistant surgeon at the Christie Cancer Hospital and visiting surgeon to the Charlton Union Infirmary. At the University of Manchester he became lecturer on operative surgery in 1904, and on the retirement of Prof. G. A. Wright in 1911 was appointed professor of systematic surgery. In this appointment he continued till 1922, when gradually failing health enforced his retirement. From his Edinburgh days he took a keen interest in the work of medical societies; in the year of his graduation he was president of the Royal Medical Society of Edinburgh, and at Manchester he was president of the Medical Society in 1919. For several years he acted as medical referee under the Workmen's Compensation Act, and his wide surgical experience and knowledge of compensation claims brought him the appointment of consulting surgeon to the Corporation Tramways Committee. Following his experiences in South Africa he directed his attention to military affairs at home, and for many years before the war was a lieutenant-colonel in the R.A.M.C. (T.F.), commanding the East Lancashire Field Ambulance. At the outbreak of war he was appointed commanding officer of the Second Western General Military Hospital, and as the number of institutions and beds increased it became his duty to oversee the administration of more than 160 hospitals with a total accommodation for some 16,000 patients. His services during the war were recognised by his appointment as deputy-lieutenant of the County of Lancaster. Mr. Smith's excellent training in anatomy was of the greatest use to him in his career. He devoted much attention to intestinal surgery, and especially to rectal carcinoma, which he treated with remarkable success. He was a careful and competent surgeon and his reputation in and around Manchester stood high.

In 1910 Mr. Smith married the daughter of Mr. Henry James Mason, of Holland Park, London, who survives him with one son and one daughter.

## JOHN EDGAR PERCIVAL SHERA, M.D. Brux.

Dr. J. E. P. Shera, who died at Wells on March 24th after a long illness at the age of 52, was educated at Dublin, took the Irish triple qualification in 1895, and graduated as M.D. at the University of Brussels in 1903. He held a number of asylum appointments, including that of senior medical officer to the Somerset and Bath Mental Hospital at Taunton, and was justices' visitor for Somerset under the Lunacy and Mental Deficiency Acts. After service with the R.A.M.C. at Salonica and in Russia he returned to England, and six years ago succeeded Dr. Pope as medical superintendent of the mental hospital at Wells.

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# Medical News.

Royal College of Surgeons of England.—At a quarterly meeting of the Council of the College held on April 15th, Sir John Bland-Sutton, the President, in the chair, the Walker Prize of £100 was awarded to Dr. William Ewart Gye in recognition of his work in advancing the knowledge of the pathology and therapeutics of cancer during the past five years. The award was made in pursuance of the following report from the committee appointed to advise the Council in the matter:—

"The work of Dr. Gye, which has been very materially assisted by the optical researches of Mr. J. E. Barnard, F.R.S., promises to throw light upon the hitherto unsolved problem of the causation of malignant disease. Taking as his starting-point the pioneer work of Peyton Rous upon fowl sarcoma, Dr. Gye produced from this tumour, by different methods, two fluids. Neither of these fluids when inoculated alone produced a tumour, but an inoculation of the mixed fluids in a healthy fowl was followed by the appearance of a sarcoma. The experimenter inferred in his further work that to produce a malignant growth two factors are necessary, first a living virus which appears to be of extreme minuteness, and secondly a chemical factor peculiar to each species of animal and effective only in that species. Dr. Gye has succeeded in cultivating this virus in vitro. Further, by a series of substitution experiments, he has shown that there can be obtained from human carcinoma and from malignant tumours of the rat and mouse a virus capable of acting with the 'specific factor' of the fowl to cause fowl sarcoma.

"These experiments, pursued with great patience and acumen over a long period and still in progress, suggest new and hopeful lines of attack upon the problem of the cause of malignant disease. Though it cannot yet be said that they have found practical application, they have already given to cancer research such a great stimulus, and such a new direction, as to justify the committee in recommending Dr. Gye for the Walker Prize."

The Cartwright Medal with an honorarium of £85 was awarded to Dr. James Sim Wallace, L.D.S., for his essay on Variations in the Form of the Jaws with Special Reference to their Ætiology and their Relation to the Occlusion of the Dental Arches. The subject for essays for this prize for 1926–30 will be the Ætiology, Pathology, and Treatment of Periodontitis (Pyorrhœa Alveolaris).—The subject for essays for the Jacksonian Prize for the year 1927 will be the Pathology, Diagnosis, and Treatment of Bronchiectasis and Abscess of the Lung.—Prof. Ernest W. Hey Groves, of the University of Bristol and the General Hospital, was appointed Bradshaw lecturer for the ensuing year.—Mr. George Buckston Browne, of London, and Mr. Thomas Herbert Bickerton, consulting ophthalmic surgeon to the Liverpool Royal Infirmary, were elected Fellows of the College.—Diplomas of member were conferred upon the following candidates who have passed the requisite examinations and complied with the by-laws:—

Eric L. Fothergill, Oxford and St. Thomas's; John Gray, Cambridge and Guy's; Alfred Hobson, M.B., Ch.B. Birm., Birmingham; Mustafa M. Raouf, Cairo and St. Thomas's; Sidney T. Seccombe, St. Thomas's; Charles C. Ungley, Durham.

Licences in dental surgery were also conferred upon the following:—

Cecil Fine, Cape and London; H. Schluchmann-Janssen, Cape and Royal Dental.

Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow.—The following candidates have passed the Triple Qualification Examination:—

Final Examination.

Francis D. R. Wylie, Harry Ellison, Basil J. Hallion, David J. Allan, John L. Clark, Robert W. Schuch, John L. I. D'Silveira, Walter C. Heslop, Thomas D. Gould, Richard A. B. Leakey, Wellwattage *Liveris Perera* Dassanayake, Minnie F. Varley, Catherine Millar, Robert J. Snodgrass, Frank G. Sinclair, John Daly, Herbert C. V. de Silva, Edwin H. Eastcott, Nawalage John A. Cooray, John P. T. Mills, Max Camrass, George M. Johnson, Joseph Walker, Ellis Stungo, Charles L. E. P. Samarasekara, Charles E. Millen, and David Isaacs.

*Medicine.*—Ching Eng Toh, William Robinson, Graeme M. Macintyre, Peter D. Samarasinghe, Hewadewage Julius Fernando, Arthur G. Farquharson, John A. Mains, Arthur H. Edgar, Owain ap Vychan Jones, John B. Hutchison, and Emile Fischbacher.

*Surgery.*—Wilfred L. G. Jewitt, Arleigh W. Scott, Eric A. Y. MacKeown, Charles H. A. S. B. Panlickpulle, Hewadewage Julius Fernando, Ann J. Brown, Thomas M. Ormiston, Leo Checchi, James G. Currie, William Jackson, Archer W. Dunn, and Kanailal Palit.

*Midwifery.*—Carapiet Aviet Basil, Samuel A. B. Hosang, Ernest P. Tulloh, Thomas A. P. Wynter, Wilfred L. G. Jewitt, Peter D. Samarasinghe, Oswald D. Beetham, Charles H. A. S. B. Panlickpulle, David R. Wark, Ann J. Brown, Thomas M. Ormiston, Emma C. M. Muschamp, Leo Checchi, James G. Currie, Archer W. Dunn, Charles V. Harrison, Joseph R. R. Nicholas, Frederick T. Shadforth, Kudyar Marimuthu Rama Swami, George V. Boyle, John B. Hutchison, Edward C. Davies, and James T. M. Symington.

*Medical Jurisprudence.*—Robert J. Ormsby, Hugh N. Maclachlan, Duncan Gould, Robert G. Paul, George M. Johnson, George R. Gardner, Gerald M. Fox, Stephen E. W. Boland, William Robinson, Mohamad Mahmoud Farghaly, and John E. Mulholland.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At recent dental examinations, out of 20 candidates entered, the following 12 passed the Final Professional Examination and were granted the diploma L.D.S. R.C.S. Edin.:—

John H. E. Sanderson, Daniel A. Pauw, William P. Baxendine, Charles F. G. Reid, George F. Downey, Jacob S. Taback, Herbert F. Simpson, David S. Johnston, William Dyce, Ian G. Sutherland, Hector Archibald, and Isaac Stein.

The following candidates passed in the subjects of:—

*Pathology.*—David Dunnet, Edward L. Calder, and Richard V. P. Campbell.
*Medicine.*—Edward L. Calder, Margaret Leslie, Richard V. P. Campbell, and Hugh Linn.
*Surgery.*—Margaret Leslie, Richard V. P. Campbell, Thomas T. Jamieson, and Hugh Linn.
*Dental Subjects.*—John McAra.

THE Chesterfield Medal at St. John's Hospital for Diseases of the Skin and the London School of Dermatology has been awarded to W. Upton, M.B., Ch.M. Sydney.

INDIAN MEDICAL SERVICE DINNER FUND.—The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant on Wednesday, June 16th. Major-General Sir R. C. MacWatt has been invited to take the chair. Tickets and all particulars may be obtained from the joint hon. secretary, Colonel J. J. Pratt, 18, Nevern Mansions, Warwick-road, London, S.W. 5.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual provincial meeting of the Fever Hospital Medical Service Group will be held at the Medical Institute, Great Charles-street, Birmingham, on Friday, April 30th, at 2.15 P.M., when Mr. F. Brayshaw Gilhespy will read a paper on Some Aspects of Ear and Throat Work in the Acute Infections.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.—Prof. Leonard J. Russell will give a course of nine lectures on Science and Philosophy on Tuesdays at 5.30 P.M. at Bedford College for Women, Regent's Park, beginning April 27th. Particulars of the course can be obtained from the director of the Institute, 88, Kingsway, London, W.C. 2.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—Mr. Neville Chamberlain, Minister of Health, will open the Society's pharmacological laboratories on Wednesday, May 5th, at 3 P.M. These laboratories have been established for the testing of the substances to be scheduled under the Therapeutic Substances Act, 1925. These include digitalis, strophanthus, ergot, pituitary extracts, and other drugs whose purity and potency cannot be determined by chemical means. The work will be carried on by the Society with the assistance of an advisory committee including Sir Humphry Rolleston, Sir Nestor Tirard, Dr. H. H. Dale, and Prof. W. E. Dixon. The director of the laboratories is Dr. J. H. Burn.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Tuesday, April 27th, at 2 P.M., Mr. Gwynne Williams will give a special afternoon demonstration in clinical surgery at the Royal Northern Hospital, to which all members of the Fellowship and General Course ticket-holders are invited. The last week of the course in urology at St. Peter's Hospital begins on April 26th; clinical work in the hospital will be available every afternoon, and a special lecture. The Royal Waterloo Hospital will hold a three weeks' course in medicine, surgery, and gynæcology, beginning on May 3rd, which will include lecture-demonstrations. On the same date a special course will start at the Central London Throat, Nose and Ear Hospital. This will be divided into two parts, clinical and operative, the latter occupying an hour and a half each morning. The two parts may be taken together or separately. On May 9th the Infants Hospital will begin a two weeks' course in diseases of infants, the first item being a morning visit on Sunday to the V.D. Centre, Thavies Inn, Holborn. On week-days the sessions will begin at 2 P.M. at the hospital. The Royal Westminster Ophthalmic Hospital is holding a course for the first three weeks of May, which will include clinical instruction daily at 2 P.M., and a special demonstration three times a week. Also from May 3rd to 28th there will be a course in psychological medicine at the Maudsley Hospital. Various forms of clinical instruction are open and special lectures will be given each afternoon. Between the same dates the London Lock Hospital will hold a course in venereal disease, with clinical work daily, and special lectures. Copies of all syllabuses, of the General Course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship, at 1, Wimpole-street, London, W. 1.

ILLUMINATING ENGINEERING SOCIETY.—A meeting will be held at the house of the Royal Society of Arts, John-street, Adelphi, on Thursday, April 29th, at 7 P.M., when Dr. James Kerr will open a discussion on School Lighting: Modern Requirements and Recent Progress.

NATIONAL MILK CONFERENCE.—Under the presidency of the Minister of Health a conference on Milk in Relation to Public Health will be held in London on Tuesday, June 8th. It is convened by the National Clean Milk Society, and particulars of membership may be had from Miss J. E. Holland, 3, Bedford-square, London, W.C. 1.

TRINITY COLLEGE, DUBLIN: MONTGOMERY LECTURES.—Dr. T. Harrison Butler, of Birmingham, delivered two Montgomery lectures in Trinity College last week, his subject being the Clinical Use of the Slit Lamp. He had a large audience for both lectures, including many outside the ranks of ophthalmic specialists. He demonstrated the use of the lamp in clinical work at the Royal Victoria Eye and Ear Hospital during his visit.

SEAMEN'S HOSPITAL SOCIETY.—In a brief note which appeared in our last issue on the work of this society, the accidental omission of a line made it appear that the statement, "There are now two resident medical officers, the nursing staff has been enlarged, and the hospital has been recognised as a nurses' training school," applied to the parent hospital at Greenwich and not, as it should have done, to the Tilbury Hospital, which is a new branch of the society's work. At the Dreadnought Hospital itself there are five resident medical officers and, of course, a well-established training school for nurses.

THE LATE SIR SYDNEY RUSSELL-WELLS.—The presentation portrait of the late Sir Sydney Russell-Wells, painted by his nephew, Mr. John Wells, R.I., will be unveiled by Sir Humphry Rolleston in the staff room of the Dreadnought Hospital, Greenwich, at 3 o'clock on Tuesday, May 4th. The portrait, which has been subscribed for by friends and colleagues of Sir Sydney Russell-Wells, was on view at the Alpine Gallery in March. It represents him in his robes as Vice-Chancellor of the University of London. Any friends of the late Sir Sydney Russell-Wells who desire to be present at the ceremony may obtain cards of invitation on application to Prof. R. Tanner Hewlett, at the Seamen's Hospital, Greenwich.

UNIVERSITY OF LONDON.—Among the recently appointed teachers of the University are Dr. Leonard Hill, Captain S. R. Douglas, and Dr. H. H. Dale, who will be teachers respectively of Physiology, Experimental Pathology and Physiology, Pharmacology and Bio-chemistry at the National Institute for Medical Research.

*Institution of University Chairs.*—It has been resolved to institute, in accordance with the Regulations on University Titles, a Chair of Bacteriology and Immunology tenable at the London School of Hygiene and Tropical Medicine, and a Chair of Epidemiology and Vital Statistics tenable at the same school.

The *D.Sc. Degree in Statistics* has been conferred on Egon Sharpe Pearson (University College) for a thesis entitled Bayes' Theorem examined in the Light of Experimental Sampling (*Biometrika*, Vol. XVII., Parts 3 and 4, December, 1925).

It has been resolved to institute an *Academic Diploma in Anthropology*, and regulations therefor will be issued in due course.

Sir Holburt Waring has been appointed to represent the University at a meeting to be held this month, to consider the steps which should be taken to organise an appropriate celebration of the centenary of the birth of Lord Lister in April, 1927.

A course of three lectures on Fitness for Work will be given by Mr. T. H. Pear, professor of psychology in the University of Manchester, at the London School of Economics on May 31st, June 1st and 2nd, at 5 P.M.

*Thomas Smythe Hughes Medical Research Fund.*—The Senate will proceed shortly to consider applications for grants from this fund, which are allocated annually for the purpose of assisting original medical research. Applications must be received not earlier than May 1st and not later than June 15th next, and must be accompanied by the names and addresses of not more than two persons to whom reference may be made. Further particulars may be obtained from the Academic Registrar.

The *Rogers Prize* of the value of £100, open to all persons whose names appear on the Medical Register of the United Kingdom, will be awarded for an essay or dissertation on the Value of the Various Methods of Investigating Diseases of the Pancreas. Essays or dissertations, addressed to the Vice-Chancellor, must reach the University on or before April 30th. Further information may be obtained on application to the Academic Registrar.

**MEDICAL GOLFING SOCIETY.**—The final of the knock-out tournament will be played between Mr. Joseph Cunning, who defeated Squadron Leader A. J. Brown, and Dr. E. Ravensworth Hart, who defeated Dr. D. S. Gordon.

**MAUDSLEY HOSPITAL, DENMARK HILL.**—A series of six clinical demonstrations of Types of Mental Disease will be given at the hospital by Dr. Edward Mapother on Wednesdays, commencing May 5th, at 2.30 P.M. The syllabus will be found in our advertisement columns (p. 44).

Major-Gen. Sir Richard Luce, F.R.C.S., will preside at the annual meeting of the Medical Mission Auxiliary to the Church Missionary Society to be held at the Central Hall, Westminster, on Wednesday, May 5th. Tickets for admission may be had from the Loan Department, C.M.S., Salisbury-square, London, E.C. 4.

**BRITISH SCIENCE GUILD.**—The annual meeting of this Guild will be held at the Mansion House on Thursday, April 29th, at 4.30 P.M., when the speakers will be Lord Askwith, Dr. E. F. Armstrong, F.R.S., Captain P. P. Eckersley, M.I.E.E., and Sir Richard Redmayne. The programme includes addresses upon the coal-mining industry, dyestuffs, and broadcasting.

**CONFERENCE ON MENTAL WELFARE.**—A conference, arranged by the Central Association for Mental Welfare, will be held on Thursday and Friday, May 20th and 21st, at the Central Hall, Westminster. The subjects of discussion will be the Proper Care of Defectives Outside Institutions; Borderland Cases; The Training of Teachers for Special Schools; and Encephalitis Lethargica. Details may be obtained from Miss Evelyn Fox, 24, Buckingham Palace-road, London, S.W. 1.

**UNIVERSITY OF LEEDS.**—New premises have long been needed for the thriving school of dentistry which is a department of the University, the hospital work now being done at the General Infirmary. A site valued at £8000 has been provided by the authorities of the General Infirmary, and the Dental Board have promised a grant of £5000 if the balance of the cost of building is obtained from other sources. The sum of £2000 has already been received from the honorary staff of the dental school, and other subscriptions are invited to ensure early completion of the two-storey building, the designs for which have already been accepted.

**VOYAGES D'ÉTUDES MÉDICALES (V. E. M.).**—The nineteenth itinerary of the V. E. M. takes place from August 29th to Sept. 8th, Alsace-Lorraine and the Vosges being the districts visited. It has been organised by Dr. Maurice Gerst under the direction of Dr. Paul Carnot, professor of therapeutics in Paris, Dr. Harvier of the Hôpital Bicêtre assisting. In the course of the journey, which commences at Nancy, Strasbourg, Colmar, Plombières, Contrexéville, and Vittel will be visited, while opportunities will be given while at Nancy for an inspection of the battle-field of Verdun. The total cost for the expedition, which is restricted to doctors and senior medical students, has been fixed at Fr.1050 for travellers from countries where the exchange in high, and Fr.650 for participants where the exchange is low, these figures including all expenses—hotels, railway tickets, and motor-cars—from Nancy, the starting-point, to Vittel the place of disbandment; moreover, there will be a reduction of 50 per cent. to medical men and their wives on the French railways from the frontier to Nancy and back to the frontier from Vittel. British doctors desirous of participating should communicate with Madame Juppé-Blaise, representative of French spas, at the Office Français du Tourisme, 56, Haymarket, London, S.W.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 10TH, 1926.

*Notifications.*—The following cases of infectious disease were notified during the week:—Small-pox, 190 (last week 180); scarlet fever, 1483; diphtheria, 919; enteric fever, 45; pneumonia, 2074; puerperal fever, 57; cerebro-spinal fever, 7; acute poliomyelitis, 3; acute polio-encephalitis, 2; encephalitis lethargica, 47; dysentery, 6; ophthalmia neonatorum, 99. There were no cases of cholera, plague, or typhus fever notified during the week. The apparent increase in small-pox may be illusory, for this week and the last embraced the period of Easter when postal notification is impeded; the mean of the two weeks is below the figure of the previous week.

*Deaths.*—In the aggregate of great towns, including London, there were 6 (1) deaths from enteric fever, 100 (45) from measles, 6 (1) from scarlet fever, 55 (5) from whooping-cough, 45 (11) from diphtheria, 45 (12) from diarrhœa and enteritis under 2 years of age, and 204 (74) from influenza. The figures in parentheses are those for London itself. The notified deaths from influenza are 71 in excess of the previous week. The number of measles deaths has now reached 100 for eight weeks in succession.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### THE ECONOMY BILL: MEDICAL BENEFIT.

ON Tuesday, April 13th, the House went into Committee on the Economy (Miscellaneous Provisions) Bill. Mr. JAMES HOPE was in the chair.

On Clause 2, which deals with the administration of medical benefit under the National Health Insurance Scheme,

Sir R. HAMILTON moved an amendment to reduce the sum of 3*d.* in respect of the expenses of the Minister to 1*d.*, which would mean, he said, a saving of about £120,000 to the societies. He understood that the actual expenses incurred by the Minister included 1*d.* per person for regional medical officers and the central committees. It had also been indicated that there were other costs to the approved societies in connexion with the printing of stamps which he understood had hitherto been a departmental charge. He should like to know whether this extra charge was also to be put on the approved societies. He thought the Committee ought to know what the charges actually amounted to, and whether the sum of 3*d.* was not considerably in excess of what was required.

Mr. N. CHAMBERLAIN (Minister of Health) said that in this question there were included only two kinds of expenditure. One was connected with the regional medical officers, and the other was the expense incurred in connexion with the central committees. The proposal to reduce the amount which might be paid to the Minister from 3*d.* to 1*d.* was based upon no logical foundation. It was not suggested by the hon. Member that 1*d.* would cover the cost of these two services, and what he was asking the Committee to do was to make a present to the approved societies of the difference between 3*d.* and 1*d.* and throw the portion of the charge which had hitherto rested on them on to the Exchequer. He could not accept the amendment.

Mr. J. H. THOMAS supported the amendment on the ground that it was an attempt to prevent the Government continuing their policy of bleeding the approved societies. Surely they had reached a stage when the Minister might make a concession.

After further discussion Mr. CHAMBERLAIN moved the closure, which was carried by 221 votes to 130. The amendment was then rejected by 220 votes to 142.

Mr. MACKINDER moved an amendment to postpone placing the cost of medical benefit on the approved societies until 1928. He said that a fortnight ago the Government had carried a proposal to rob the insurance fund of £2,800,000; now they were trying to put an extra cost on the approved societies of £2,000,000. The amendment would give the societies an opportunity to look round. One could argue—and he felt almost inclined to argue—that the position of the medical men was being made quite safe by Act of Parliament. He had taken part in the early negotiations when they tried to arrange terms with the doctors. They were now going to reach the magnificent sum of 12*s.* per year per member. He would like to go into other questions such as the drugs the doctors prescribed, but he feared it would be out of order to do so.

The Deputy Chairman (Captain FITZROY): I cannot see what this argument has to do with the question of postponement.

Mr. MACKINDER said he was trying to show the Committee that it was extremely wrong to give the doctors by Act of Parliament at least 12*s.* per year per member. At all events they ought to give the approved societies an opportunity of realising on a 12 months' experience what the effect of this Bill was going to be.

Mr. THOMAS was speaking in support of the amendment at 11 o'clock when, according to the rules of the House, the chairman left the chair to make his report to the House.

### *Health Insurance in the Services.*

On Wednesday, April 14th, the House considered on report a financial resolution in connexion with the Economy Bill, which enables the Government to appropriate the sum of £1,100,000 from the Navy, Army, and Air Force Insurance Fund. On the motion "that the House doth agree with the Committee in the said resolution,"

Mr. RAMSAY MACDONALD said that when he listened to the speech of the Secretary of State for War on the Committee stage, he really wondered if he were attending a meeting of the Soviets in Moscow. The arguments were exactly the same as one would expect to hear there when they were confiscating private property. The State was in need and the State in need dominated everything else. As a matter of fact, the country was in a peculiar position at the present time. It had got a Jacobin as Chancellor of the Exchequer, and as he wanted to balance his Budget he was adopting the principles of Lenin. He had persuaded the Minister of Health to take the position of Zinovieff, and he was asking the Secretary for War, who was doing his best, to fill the shoes of Mr. Trotsky. It was perfectly clear that if the Chancellor of the Exchequer had not been afraid to do it he would have invaded the actual surpluses of the approved societies. But here he was actually putting his hand into the pool and taking from it an accumulation of £1,100,000. There was absolutely no ground for doing this except the most miserable attempt to differentiate between this Fund and the funds of other approved societies, which could not be substantiated by anyone. Those who voted for the Government's proposal were going to declare that if the State found contracts inconvenient it could break them without even consulting the people with whom those contracts had been made.

Sir L. WORTHINGTON-EVANS (Secretary of State for War) said there was nothing in this measure which was in any sense at all a confiscation of property belonging to any individual whatever. This Fund was not an approved society; it was not managed by the members, and no member had any right of membership at all. It was a Fund created by the Government under an Act of Parliament for the purpose of providing benefits for those serving men who were unable to join approved societies. There were 23,000 entitled to benefit under this Fund. There were, as a matter of fact, about 160,000 serving men who were paying contributions, but only on an average 400 out of those who left the service every year joined this Fund because of their impaired health. The rest of them joined the friendly societies, and if the improvements, which were part of the Government plan to-day were fully carried out, they would go into those societies fully paid up without having to wait until they were entitled to benefit. This Fund was a Government guarantee of benefit, and the members were not entitled like members of approved societies to normal benefits and additional benefits. They were specifically prevented by Act of Parliament from having additional benefits at all. The actuary had certified that not merely the £1,100,000 which was being transferred, but the whole £1,500,000 was surplus to the requirements of the Fund—i.e., to pay the benefits to which the members were entitled. The surplus arose from the excessive contributions paid in by the Government in either one or other of its capacities. £400,000 was being set aside as a reserve against the liabilities for the additional benefits which the soldiers, sailors, and airmen were getting under these proposals—not the limited benefits to which they had been entitled in the past, but an additional benefit equal to the average of the approved societies. It was absurd, therefore, to talk about confiscation. It was done for party political purposes and with the obvious intention of creating dissatisfaction in the Forces of the Crown. The truth was that these men, far from being unfairly treated, were getting greater benefits under this Bill than were given to them by Mr. Lloyd George under the original Act.

After further discussion Sir L. WORTHINGTON-EVANS moved the closure which was carried by 240 votes to 144. The resolution was then agreed to.

The House then went into Committee on the Economy (Miscellaneous Provisions) Bill, and continued the discussion of Mr. Mackinder's amendment to Clause 2, which was interrupted on the previous evening.

Mr. N. CHAMBERLAIN (Minister of Health) said they had been told over and over again that this was an unjust charge in spite of the fact that the approved societies themselves, through the Consultative Council, recognised the justice of their meeting out of their funds the cost of medical benefit as well as other benefits. The position was really this. Under the main Act there was provided 9s. 6d. plus 6d., making 10s., as the cost of medical benefit and administration expenses. Now that would be entirely insufficient. It was necessary in 1924 to make some arrangement under which the difference between this 10s. and the actual cost of medical benefit and administration expenses should be met. There were negotiations and discussions between the Government and the approved societies. He understood that the approved societies were asked to meet this difference out of their benefit fund and they refused. Finally a way out was found by taking from the Unclaimed Stamps Sales Account certain moneys which were unused and utilising those moneys to make up a difference between the amount provided under the Act and the actual cost of the benefit and administration. That arrangement was embodied in an Act passed in 1924 called the Cost of Medical Benefit Act. Under that arrangement the full cost of those expenses had been met up to the present without making any charge on the Exchequer. Part of it had been provided out of the benefit funds, and the other out of these unclaimed stamps. The effect of postponing this clause would be that there would be no statutory provision for the difference between the cost and the 9s. 6d. and 6d. provided for in the Act of 1924. The amendment would mean that the whole scheme would come to an end. That was an impossible position. If hon. Members thought that they could continue to make up this difference out of the same fund which had hitherto made it good, he could assure them that that was not the case. The fund would be exhausted by the end of the year, and unless this clause was passed in its present form the whole scheme would be thrown into chaos and disorder and they would have to begin again and try to find some new arrangement.

After further discussion, Mr. CHAMBERLAIN moved the closure, which was carried by 215 votes to 180. Mr. Mackinder's amendment was then negatived by 241 votes to 144.

### *Allocation of the Composition Sum of 13s.*

On the motion that Clause 3 stand part of the Bill,

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health), replying to questions, said that there was a special provision for Scotland in Clause 2. In the sum of 13s. there were two items which particularly affected the sparsely populated areas of Scotland. One might be called the expenses for the mileage of doctors. In allocating the 13s., inasmuch as in Scotland the drug bill was less than in England, the clause allowed a special assistance to be given to medical men in particular areas in Scotland which were sparsely populated. That was over and above the amount given in England, and the necessary adjustments were made to keep it within the sum of 13s. This provision was put in at the request of the Scottish societies in order that further arrangements might be made with the medical men in that country to meet their special difficulties.

Mr. LLOYD GEORGE asked if the sum of 13s. under this clause represented the amount which the Minister of Health had decided should be paid to the doctors, or was it merely a maximum which had been put in for the purpose of complication without consulting the people who were primarily concerned at all and who had to pay it. On the other hand, if it was merely a figure to form the basis for negotiation, what folly to put in this sum at all! That was not a good way to start negotiations. He also wished to know whether the money which had been allocated to the Highlands of Scotland was money to which the Government were contributing 9d. in addition to what they were giving now, or whether on the contrary they would not be relieved of the part of the £3,800,000 to which they were contributing at the present moment.

Mr. N. CHAMBERLAIN said the sum of 13s. was a composition sum and included the composition fee which was the subject of agreement with the doctors; 9s. went to the doctors out of the 13s.

Mr. LLOYD GEORGE: What is the present amount of the composition sum?

Mr. N. CHAMBERLAIN: Ten shillings is the comparable amount, and the extra charge which comes out of the fund is the difference between 10s. and 13s. Continuing, the right hon. gentleman said that the 13s. was made up as follows: There was 9s. for the doctors, 4½d. for mileage charge, 2s. 9d. for drugs, 6d. for the expenses of the insurance committees, and 3d. for the Minister of Health in respect of regional medical officers and central administration. That made 12s. 10½d. There was a margin of 1½d. which was put in because, as was pointed out in the report of the Royal Commission, the cost of drugs had been rising in the past and there was no guarantee that they had reached finality in that respect. But it was provided in the proviso of Clause 2 that "if the aggregate sum paid for any year to insurance committees and the Minister under this section in respect of each of the total number aforesaid is less than the sum applicable as aforesaid in respect of each of the said total number, the balance shall be carried forward and be treated as being applicable as aforesaid in any subsequent year." So that nothing was lost if the margin was carried forward. It would be seen that this 13s. was nearly related to the actual cost of medical benefit, and was, in fact, a strict following of the recommendation of the Royal Commission, and while statements had been made as to the consent of the Consultative Committee to this proposal, the approved societies themselves did not consider that these benefits chargeable to the funds of the societies were in any way unreasonable.

Mr. WHEATLEY said that while the Minister of Health was very careful to shelter himself behind the recommendations of the Royal Commission when he was dealing with one part of the measure, he carefully ignored the fact that he was running directly contrary to the recommendations of the Commission in this particular section of the Bill which the Committee was discussing. He was heaping up expenses on the societies; he was diminishing the State contributions to the societies, and in that way he was preventing the societies from carrying out the policy of additional benefits, which was one of the main recommendations of the Royal Commission. Another thing which the right hon. gentleman carefully ignored was the fact that while certain interests, including the medical profession, were to get more, the whole of that additional expenditure was to come out of the pockets of the poor.

Mr. CHAMBERLAIN: Does the right hon. gentleman say that the medical profession are to get more in consequence of this clause? If so, that is a misunderstanding.

Mr. WHEATLEY: They are to get more than they would have got out of the old contributions to the societies.

Mr. CHAMBERLAIN: Not more than they are getting now.

Mr. WHEATLEY said that was so, but the sum which the doctors were getting now was the sum fixed while this matter was being discussed by the Royal Commission, and the settlement of this point was one of the things which gave rise to the appointment of the Commission. The doctors could not continue to receive the sum they were getting now out of the amount now being paid by the insured people, and therefore in order to save any reduction of the additional sum put on during the past two years for medical services, the right hon. gentleman took the other course and increased the amount to be paid by the insured people to a sum that would enable the demands of the other section to be met. This showed that they were taxing the poor to give additional remuneration to the medical profession. He was not arguing that the doctors were not entitled to the additional remuneration, nor that the 9s. capitation fee was too high, but he was arguing that it was unfair, when it was decided to increase the capitation fee, to include in the same provisions proposals not for an additional Government grant, but proposals to reduce the existing Government grant, which was based on a lower capitation fee than the one now being paid. That was a real injustice.

Mr. N. CHAMBERLAIN moved the closure, which was carried by 191 votes to 110. The clause was then added to the Bill by 118 votes to 114.

### *Making Good Deficiencies.*

On Clause 3 (which deals with the application of the Reserve Suspense Fund and Central Fund towards making good deficiencies due to the provisions of Part 1 of the Bill),

Mr. R. J. DAVIES moved an amendment to provide that the valuation of societies should take into account the necessary provision for continuing any additional benefits granted in respect of the surpluses of the first and second valuations. He said that the purpose of the amendment was to make sure that an approved society which had paid additional benefit as a result of the second valuation should not be in a worse position as a result of Clause 3 than it would have been if the clause had never been part of the Act. The clause provided that where a society was found on a certificate of the actuary to be in deficiency, that deficiency should be made up from a pool of surpluses of the other societies. Where a society had been giving, for the purposes of illustration, 2s. a week additional benefit for sickness, an additional 1s. for disablement benefit, and an additional 5s. for maternity benefit, besides dental treatment and dentures, and optical treatment and optical appliances, the amendment would enable the society to pay this additional benefit in spite of the provisions of this clause. It was agreed that, owing to Clauses 1 and 2, at least 10 per cent. of the societies would be in deficiency. That meant that 1,500,000 persons would suffer a deficiency through their approved societies.

Mr. N. CHAMBERLAIN said that he thought that Mr. Davies was not quite correct when he assumed that the societies representing 10 per cent. of insured persons who, as suggested by the actuaries, would be thrown into deficiency, would thereby be worse off. The provisions of this Bill were such that at any rate in some of those cases they would be no worse off. He would like to point out to the Committee what would be the effect of this amendment. Supposing that owing to some general cause the surpluses of all societies were reduced at the next valuation on account of an epidemic of disease, under the amendment there would be no claim on the fund from the careful society, but other societies which, through their laxity and carelessness might have brought down their surpluses on the third valuation, would immediately and automatically come in for a claim on the Reserve Suspense Fund. He did not think that this would be welcomed by the societies, and he could not accept the amendment.

Dr. DRUMMOND SHIELS said that it was rather alarming to find that the Minister of Health contemplated that after the third valuation a substantial number of societies might find it necessary to cut down the benefits given after the second valuation. It must be kept in mind that these additional benefits were not extra gifts, or something really outside the scope of the fund. They were simply an attempt to come a little nearer to the object of the insurance system. A full and complete medical service and adequate financial benefits were designed from the very first. Restrictions on these were principally made so that time might be given to show the financial soundness of the scheme, and how it had stood the strain of the war years. Now that these things had been assured it had naturally been expected, and the approved societies contemplated, bringing the scheme somewhat more into line with what was originally intended, and, therefore, these additional benefits which were being given as the result of the second valuation were not largess which might be taken away when circumstances were less propitious; they were steps on the road to a full realisation of a complete insurance scheme. The Minister's statement, therefore, would come as a very great surprise and shock to those who had been working the Act. It could not too often be emphasised that every penny which could be accumulated by this fund was required to make the scheme efficient, which at present it was not. For instance, no medical scheme could be successful that did not provide for efficient dental treatment. There was also the question of specialist medical benefit. In view of the enormous complexity of diseases and the great increase in specialist treatment nowadays, it was perfectly ridiculous to maintain a purely general practitioner's service for panel patients. He thought the least the Government could do was to say that in the event of a deficiency on the third valuation they would make up not only the minimum statutory benefits but any other benefits which might have been given, and to which the insured persons quite rightly thought they were entitled.

Mr. LLOYD GEORGE asked the Minister of Health whether he accepted the amendment in its present form or not to guarantee that through no action of the Government would there be any withdrawal of benefits already declared.

Mr. N. CHAMBERLAIN said that it was much too soon to be able to say what they would be able to do in 1931. The actuaries were themselves unable to say. But what they did know was that while there was a reduction in the State contribution there were also various other factors, such as the rate of interest, the increasing amount and proportion of the societies' funds on which that rate of interest was earned, and the increasing number of contributors that might be expected each year. But the surpluses must fluctuate. It was therefore asking something that had never been contemplated to ask that additional benefits should be in the same position as if they were statutory benefits.

After further discussion the closure was carried by 162 votes to 104. The amendment was then negatived by 163 votes to 106.

Clause 3 was added to the Bill by 163 votes to 105.

Clause 4 of the Bill amends Section 68 of the principal Act. Para. (*b*) of Subsection 2 of the clause deals with the appropriation of certain sums for defraying such proportion as is not derived from moneys provided by Parliament of any liability outstanding on Dec. 31st, 1926 (after exhausting all sums applicable thereto under Section 1 of the National Health Insurance (Cost of Medical Benefit) Act, 1924), in respect of the cost of drugs, medicines, and appliances supplied as part of medical benefit.

After debate the clause was added to the Bill by 155 votes to 83. Progress was reported.

### *Health Insurance in the Services—(continued).*

On Thursday, April 15th, the House went into Committee on the Economy Bill, Mr. JAMES HOPE in the chair.

On Clause 5 (which deals with the transfer to the Exchequer from the Navy, Army, and Air Force Insurance Fund, constituted under the principal Act, of £1,100,000),

Mr. RICHARDSON moved to leave out Subsection (1), which transfers the sum of £1,100,000 from the fund to the Exchequer.

Dr. VERNON DAVIES said that the supporters of the Government had listened to many criticisms of this Bill, and they had been accused of cowardice for not speaking in support of it. The Opposition were wrong in thinking that they had remained quiet because they were not willing to support the Government, or because the Opposition's arguments had convinced them. He thought that the Government were acting honestly and seriously in this matter. But he hoped that the Secretary for War would pass on to the Chancellor of the Exchequer the suggestion that there was a crying need in the Service for some of this money. He referred particularly to the question of tuberculosis, which in the Services was at present an extremely urgent one. The medical authorities decided whether tuberculosis was attributable to the conditions of service or not, and as far as he could make out there was no appeal against their decisions. Consumption was caused by a bacillus which everyone was breathing in every day of his life. They did not get consumption and die from it, because the condition of their bodies was such that they were able to resist the germ. But no doctor, whether in the Navy, Army, or Air Service, was in a position when a man had contracted consumption to guarantee that it was attributable to the conditions of his service or not. It was only a guess, though it might be a very good guess.

During the past few weeks he had obtained definite statistics from the three Services, and he found that in the last three years the number of men invalided from the Air Force suffering from consumption was 92, from the Army 601, and from the Navy 479, giving an average of 390 per annum over the three Services. He found that the War Office had no records to show how many cases of the disease could be attributed to or aggravated by conditions of service. In the Navy 1·16 per cent. of the cases were held to be attributable to service and were granted pensions; in the Air Force 18·47 per cent. were held to be so attributable. He called the attention of the Committee to the remarkable difference between the figures for these two Services, and of the two he would think undoubtedly the Navy was the more unhealthy, because there there were men serving in submarines and torpedo boats, at times in very trying circumstances. He wondered whether the Air Force, being a junior Service, had perhaps not yet found out by tradition and precedent a rule of thumb for dealing with this matter. Perhaps they allowed a freer hand and had been a little more charitable to the men concerned. There must be some definite cause why apparently the Air Force medical officers were more sympathetic than those in the other Service. It was absolutely impossible in the majority of cases in either of the Services to define accurately whether the cause of the disease was attributable to the conditions of service, though one might have shrewd suspicions. That was not a sufficient ground for granting or refusing a pension. In all cases there was a very thorough examination, and a man who was found to have consumption was invalided out of the Service. But if it was found that the disease was not attributable to the conditions of service, the man could get nothing. He knew cases which went to show that under present conditions the amount of money which these men received as gratuity, and from the National Insurance Fund or the Services Fund, was grossly inadequate, and for the sake of their health and their lives it was necessary that some other means should be found of assisting them. Here there was a fund which could be partly applied to that purpose. He would suggest a scheme of compulsory insurance against consumption. If all the men paid 1*d.* per week it would provide each man invalided out of the Service with £100 capital. Out of the £1,100,000 with which the Committee was now dealing, a grant could be made of £250,000 to produce £10,000 a year, and taking the average of the cases of the last three years he reckoned that a sum of £10,000 a year would be sufficient to give these men £1 a week as long as they lived. He took it that the average period of life in those cases would be two years.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said that under the proposals of the Government a certain section of the men in whom Dr. Vernon Davies and other hon. Members were interested—the men who were unable to join the approved societies—would be able to receive much better benefits and assistance. As a result of the Government's proposals the cash benefits to these men would be increased in sickness to 18*s.* a week, to 9*s.* in respect of disablement benefit, and 40*s.* for maternity benefit—a very considerable increase. In addition they would receive, as recommended by the Royal Commission, the treatments which, on the average, were given, such as dental treatment, on the lines of the approved societies' additional benefits. The selection of these benefits would be made by the Minister of Health with the aid of the Committee which managed the Fund, and regulations would be laid before the House of Commons.

Mr. LLOYD GEORGE regretted that Sir Kingsley Wood had not found it possible to give a more sympathetic answer to the appeal which had been made by Dr. Vernon Davies.

Mr. Richardson's amendment was negatived by 227 votes to 141.

Clause 5 was added to the Bill by 229 votes to 121.

Clause 6 (which deals with consequential amendments of enactments relating to National Health Insurance and variation of reserve values) after discussion was added to the Bill by 225 votes to 132.

Clause 7 (short title and construction and application of Part I of the Bill) was agreed to by 210 votes to 128.

### MIDWIVES AND MATERNITY HOMES BILL.

This Bill, introduced by Colonel F. E. Fremantle and supported by the Government, to amend the Midwives Acts, 1902 and 1918, and to provide for the registration of maternity homes and other purposes, was considered by Standing Committee A of the House of Commons on Tuesday, April 20th, when Sir Kingsley Wood moved a drafting amendment to Clause 1, with the object of making it clear that there should be no possibility of admitting any man to the Midwives Roll. The Chairman ruled that if this amendment were passed it would cut out an amendment by Major Hills to substitute for "the personal supervision of a duly qualified medical practitioner" the words "in the presence of a duly qualified medical practitioner." Colonel Fremantle had a similar amendment to propose. Sir Kingsley Wood said he understood that the Central Midwives Board were now content with the clause as drafted, and his amendment was agreed to. An amendment to Clause 2, moved by Sir Kingsley Wood, to entitle a midwife suspended on account of infection to recover compensation from the local supervising authority, was agreed to. His further motion to leave out Clause 3 was negatived. An amendment by Sir D. Newton to make the councils of non-county boroughs and urban districts the authority to administer the Bill in their areas was discussed.

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## HOUSE OF COMMONS.

### TUESDAY, APRIL 13TH.

### *Service Medical Organisation.*

Mr. HAYES asked the Secretary of State for Air what was the total cost of the headquarters medical organisation of the Royal Air Force; and whether he was taking steps to prevent overlapping between the Royal Air Force medical services and the medical services of the Navy and Army.—Sir S. HOARE replied: The answer to the first part of the question is £18,026, including clerical staff. As regards the second part, the fullest use is made wherever possible of naval and military hospitals for Air Force patients. There are only three separate Air Force hospitals in this country, and of these two are situated at stations at which large numbers of Air Force personnel are concentrated, but which are remote from any hospitals administered by the other Services; the third is a small hospital with only 25 beds, primarily intended for officers suffering from flying disabilities. Conversely the existence of Air Force hospitals in Iraq and Palestine eliminates the need for maintaining British or Indian Army hospitals for the imperial and local ground forces in those countries. To illustrate the extent to which effective coördination has been carried, I may say that during 1925 the admissions of personnel (including families) of the Royal Air Force to naval and military hospitals numbered 3227, whilst during the same period there were upwards of 8000 admissions of personnel of the Navy, the British and Indian Armies, and local forces in Iraq and Palestine to Air Force hospitals. The possibility of further coördination as between the Air Force medical service and the medical services of the Navy and Army (as well as the Ministry of Pensions) is kept continually under review by a Joint Medical Services Committee set up in accordance with the recommendations made by the Committee presided over by Sir A. Mond and announced in this House on May 30th, 1923. This Joint Committee advises in regard to: (1) important questions of medical policy such as the construction of new hospitals; (2) provision of facilities for common training; (3) specifications for the supply and medical stores and appliances; (4) the use of Navy, Army, and Air Force hospitals for the accommodation of disabled pensioners; (5) all matters in respect of which economies might be effected by coöperation of the four departments. Regular meetings have been held and the Committee has been successful in securing the closest coöperation and coördination of medical work in the three Services.

### THURSDAY, APRIL 15TH.

### *The University of London.*

Sir CYRIL COBB asked the President of the Board of Education whether the Government had arrived at a decision on the recommendations of the departmental committee on the University of London.—Lord E. PERCY replied: Yes, Sir. The Government are in general agreement with the committee's recommendations, and they propose to introduce legislation for the purpose of setting up a statutory commission for the university accordingly.

### *Slum Clearances.*

Mr. TREVELYAN THOMSON asked the Minister of Health how many local authorities had put in hand schemes for slum clearances under the Housing Act of 1919 and subsequent Acts.—Mr. N. CHAMBERLAIN replied: Since 1919, 78 local authorities have submitted schemes for dealing with slum areas, and I have information of 33 other local authorities who have schemes in preparation or under consideration. Eighty-five schemes relating to 67 local authorities have been confirmed.

### *Progress of Housing Schemes.*

Mr. TREVELYAN THOMSON asked the Minister of Health how many houses had been completed to date under the 1919 and subsequent Housing Acts and how many were at present under construction, giving separate figures for municipal and private enterprise.—Mr. N. CHAMBERLAIN replied: Up to the 1st instant 238,319 houses had been completed in England and Wales under the 1919 and subsequent Housing Acts by local authorities and 153,289 by private enterprise. The numbers under construction on the 1st instant were 45,920 by local authorities and 35,038 by private enterprise.

### *Deposit of Refuse in Rural Areas.*

Mr. RYE asked the Minister of Health whether he would consider the advisability of bringing in legislation which would strengthen the powers of local authorities in rural areas and enable them to prevent the deposit of refuse and other offensive matter in public places and so maintain local amenities.—Mr. N. CHAMBERLAIN replied: I am not satisfied, on present information, that further powers would be of any great practical advantage, but I am prepared to consider any further evidence that may be brought to my notice.

### *Miners' Welfare Fund and Hospital Grants.*

Mr. THOMAS WILLIAMS asked the Secretary for Mines how many grants had been made out of the Miners' Welfare Fund to assist in the erection of new hospitals or to extend existing hospitals; the districts where the grants were made; and the amount of such grants.—Colonel LANE FOX replied: Thirty-one allocations have been made out of the Miners' Welfare Fund to assist in the erection of hospitals or to extend existing hospitals in the districts of Fife, Northumberland, Durham, North Wales, West Yorkshire, South Derby, Warwickshire, Forest of Dean, and South Wales. The total amount of the allocations is £53,720. I am sending the hon. Member a detailed list of the schemes.

### MONDAY, APRIL 19TH.

### *Indian Medical Service.*

Colonel APPLIN asked the Under Secretary of State for India whether he was aware that officers of the Indian subordinate medical service who served with the Army throughout the war, and had since qualified in Great Britain in medicine and surgery, were debarred from entering the Indian Medical Service because their war service prevented them qualifying within the age limit; and if he would consider extending the age limit to 34 years in the case of medical officers who had been prevented from qualifying before reaching the age of 32 by reason of such war service.—Earl WINTERTON replied: Admission to the Indian Medical Service of members of the Indian Medical Department was one of the matters raised by the recent Anglo-Indian Deputation. My hon. and gallant friend's suggestion will be considered when the Government of India's views have been ascertained.

### *The Tuberculosis Order, 1925.*

Brigadier-General CLIFTON BROWN asked the Minister of Agriculture if he would state how many animals had been destroyed under the Tuberculosis Order of 1925; how much compensation had been paid on this account by the Government; and how much by the county rates.—Mr. GUINNESS replied: From Sept. 1st, 1925, when the Order came into operation, up to Dec. 31st last, 7151 cattle were slaughtered by local authorities and £31,294 paid by them in compensation. In accordance with the Diseases of Animals Act, 1925, £23,470 has been refunded by the Ministry, leaving the remaining quarter of the cost, or £7823, to be met out of local rates. I understand that the local authorities have also received £7958 by the salvage of carcasses, which more than covers their share of the compensation.

## Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.*

### SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, April 29th.—4.30 P.M., *The following papers will be read:* C. H. Best, H. H. Dale, J. P. Hoet, and H. P. Marks: Oxidation and Storage of Glucose under the Action of Insulin. C. H. Best, J. P. Hoet, and H. P. Marks: The Fate of the Sugar Disappearing under the Action of Insulin. (Communicated by Dr. H. H. Dale.) J. P. Hoet and H. P. Marks: Observations on the Onset of Rigor Mortis. (Communicated by Dr. H. H. Dale.) J. C. Mottram, G. M. Scott, and S. Russ: On the Effects of Beta Rays from Radium upon Division and Growth of Cancer Cells. (Communicated by Prof. A. W. Porter.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 26th.—8 P.M., ODONTOLOGY. Mr. W. Warwick James: Do Epithelial Odontomes Increase in Size by their own Tension? Dr. E. W. Fish: The Circulation of Lymph in Dentine, with some Observations on the Metabolism of this Tissue.

TUESDAY.—5.30 P.M., MEDICINE. Discussion: The Clinical Significance of the Respiratory Metabolic Rate. Opener: Dr. E. P. Poulton, followed by Dr. C. M. Wilson, Dr. Gardiner-Hill, Dr. R. D. Lawrence, Dr. Reginald Hilton.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, April 30th.—8.30 P.M., Papers will be read by Dr. Lacapere, of Paris, and Dr. R. C. Jewesbury, on Marriage and Syphilis. A discussion will follow.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

MONDAY, April 26th.—3 P.M. (at 122, Harley-street), Dr. F. R. Walters: Some Needs and Indications for Treatment in Pulmonary Tuberculosis. Dr. F. A. Lucas Hammond: Phthisical Psychosis. Dr. S. Woodhouse: The Pathology of Pleural Adhesions in Tuberculosis.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, April 26th, to SATURDAY, May 1st.—Special afternoon demonstration in clinical surgery on Tuesday at 2 P.M., at the Royal Northern Hospital, by Mr. Gwynne Williams.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wednesday, at 5.15 P.M., Dr. Heald will demonstrate the Medicinal Uses of Ultra-Violet Light.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Clinical work each afternoon and special lectures. Further information from the Secretary of the Fellowship of Medicine.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Quay-street.

THURSDAY, April 29th.—4.15 P.M., Mr. McEvedy and Dr. Twining: The Surgical Dyspepsias.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES POST-GRADUATE COURSE.

THURSDAY, April 29th.—4.30 P.M., Dr. Stavely Dick: Uses and Abuses of Laboratory Methods in the Diagnosis of Syphilis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, April 27th.—4.15 P.M., Mr. S. R. Wilson: The Evolution of Anæsthetics.

FRIDAY.—4.15 P.M., Dr. A. E. Barclay: X Ray Investigation of the Intestinal Tract.

## Appointments.

CADDY, A., M.D. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Royal Westminster Ophthalmic Hospital and Ophthalmic Surgeon to the Woking and District Victoria Hospital.

EVANS, T. B., M.B., Ch.B. Liverp., Medical Officer of Health, Abersoch, S. Carnarvonshire.

HALL, ARTHUR, M.D. Camb., F.R.C.P. Lond., Consulting Physician to the South Yorkshire Mental Hospital, Sheffield.

SOLLY, E., M.B. Lond., F.R.C.S. Eng., a Medical Referee under the Workmen's Compensation Act for Bradford, &c. (Circuit No. 12).

STURROCK, Eva M., M.B., Ch.B. Glasg., D.P.H., Assistant Medical Officer of Health, Burgh of Motherwell and Wishan.

Wrexham and East Denbighshire Hospital: DAVIES, A. L., M.B., Ch.B. Liverp., WALWYN, F., L.R.C.P & S. Edin., REID, J., M.B., Ch.B. Edin., Hon Asst. Physicians and Surgeons; WILSON, M.B., Ch.B. Dub., Hon. Ophthalmic Surgeon; GRACE, W. H., M.D. Lond., Hon. Pathologist; WALLIS, R., Hon. Dental Surgeon.

## Vacancies.

*For further information refer to the advertisement columns.*

*Beit Memorial Fellowships for Medical Research.*—Jun. Fellows. £350.

*Bristol Royal Hospital for Sick Children and Women.*—H.S. £125.

*Bristol University.*—Lecturer in Forensic Medicine and Toxicology. Also Lecturer in Public Health.

*Burton-on-Trent Infirmary.*—Jun. Res. H.S. £150.

*Cancer Hospital, Fulham-road, S.W.*—H.S. At rate of £100.

*Coventry and Warwickshire Hospital, Coventry.*—Res. H.S. £150. Res. H.P. £125.

*Dagenham Sanatorium, Dagenham, Essex.*—Asst. M.O. £250.

*Durham County Mental Hospital.*—Second Asst. M.O. £500.

*Greenwich, Dreadnought Hospital.*—Med. Supt. £300.

*Hampstead General and North-West London Hospital, Haverstock Hill, N.W.*—H.S. and Cas. Surg. O. Each at rate of £100.

*Hospital for Epilepsy and Paralysis, Maida Vale, W.*—Med. Reg. £100.

*Leicester Royal Infirmary.*—H.P. At rate of £120.

*Liverpool, Eye and Ear Infirmary, Myrtle-street.*—Hon. Aural S.

*London Hospital, E.*—Asst. in Dept. of Dermatology and Syphilology.

*Metropolitan Asylums Board, Mental Hospitals Service.*—Second Asst. M.O. £560. Also Jun. Asst. M.O. £500.

*Plymouth Borough.*—Asst. Port M.O., &c. £750.

*Preston and County of Lancaster Royal Infirmary.*—Hon. Surg. to Eye, Ear, Nose and Throat Dept. Also Hon. Asst. S.

*Prison Medical Service.*—M.O. £350.

*Richmond, Surrey Royal Hospital.*—H.S. and Asst. H.S. £150 and £100 respectively. Also Hon. P. to Out-patients.

*Royal College of Surgeons in Ireland.*—Prof. of Physiology.

*Royal Northern Hospital, Holloway.*—Surg. and Phys.

*St. Mary's Hospital, W*—First Asst. Pathologist. £500.
*Salisbury General Infirmary*—H.S. £150
*Sheffield Royal Infirmary*—Jun. Aural and Ophthalmic H.S. £80
*Surrey County Council, Kingston-on-Thames.*—Asst. M O. £600
*University College Hospital, Gower-street, W C*—Harker Smith Reg £350 Also Obstetric Reg £125
*Wigan Infirmary*—Third H.S. £150

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Biggar (Lanarkshire).

The Secretary of State for the Home Department announces a vacancy for a Medical Referee under the Workmen's Compensation Act for the Kilmarnock District (Sheriffdom of Ayr) Applications should reach the Private Secretary, Scottish Office, not later than May 12th.

A vacancy for a Medical Referee under the Workmen's Compensation Acts (Northern Ireland) for the County of Down is announced. Application should be made to the Secretary, Ministry of Labour, 7, Upper Queen-street, Belfast, not later than May 8th.

A vacancy for a special appointment of a Medical Practitioner under the Workmen's Compensation Act, 1906, for cases arising in mines in the district of Ashton-in Makerfield is announced. Applications for the post or for further information should reach the Private Secretary, Home Office, Whitehall, London, S W 1, not later than May 15th.

# Births, Marriages, and Deaths.

## BIRTHS.

ATKIN—On April 12th, at The Glen, Sheffield, the wife of C. S Atkin, M B, of a son

GURNEY DIXON—On April 14th, at Ober House, Brockenhurst, Hants, the wife of S. Gurney Dixon, J P, M.D, of a daughter

MASON—On April 15th, at Great Portland-street, W, the wife of Dr C L. Mason of a daughter

## MARRIAGES

BICKERTON—HAWDON—On April 10th, at St. Cuthbert's Church, Ormesby, Yorkshire, by the Ven. Archdeacon Lindsay, assisted by the Vicar, the Rev. J O. C. Kemm, John Myles Bickerton, F R.C.S, youngest son of Mr and Mrs. T. H Bickerton, of Liverpool, to Margaret Alsager, only daughter of Colonel and Mrs. Hawdon, Upsall Grange, Nunthorpe, Yorkshire.

BOYLE—RUANE.—On April 14th, at SS Peter and Paul Church, Ilford, Captain H A Boyle, R.A.M.C., to Mary Ellen Ruane, eldest daughter of Mrs. Catherine Ruane, of Ilford, Essex.

VON BRAUN—COLE HAMILTON—On April 15th, at the British Embassy Church, Paris, C R. B von Braun, M.R.C.S., L.R.C.P., late Captain, R.A.M C, to Nora Kathleen, only daughter of Major W M Cole-Hamilton, Beltrim Castle, Co Tyrone

GIMLETTE—WILSON—On April 14th, at St. Jude's Southsea, Captain G. T Gimlette, R.A.M.C., to Mary, younger daughter of Mr and Mrs. A. Wilson, Southsea.

HUSBANDS—FIELD—On April 14th, at All Souls', South Hampstead, Roland Husbands, M.B., B.S. Lond., to Dorothy, younger daughter of the late A. J Field, of Bushey, and Mrs. Field of Oxhey, Herts.

McKINLAY—ALEXANDER.—On April 17th, at the Parish Church, Walton-on Thames, Captain R. McKinlay, to Audrey Forbes, elder daughter of Dr Forbes Alexander and the late Mrs. Forbes Alexander, Clevedon, Weybridge.

SHERWELL—WILKINSON—On April 10th, at St. Saviour's, Torquay Arthur Erskine Sherwell, M.B, Ch.B, to Mary Eileen Grace Wilkinson, L.S.A., eldest daughter of Dr and Mrs. T B Wilkinson, of Plymouth.

## DEATHS.

BOTT—On April 14th, at Washenden Manor, Biddenden, Kent, Henry Bott, M.R.C.S., L.R.C.P., late of Brentford, aged 72 years.

BOUCH.—On Tuesday, April 13th, Thomas Bouch, of 45, North cote-avenue, Ealing.

SMITH—On April 13th, at Richmond House, Ingleton, Carnforth, Yorks, John William Smith, D L, F R.C.S., Brev Col., R.A.M C (Territorial Force), late of Manchester, aged 61.

*N.B—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths*

ENLARGEMENT OF CHARING CROSS HOSPITAL.—The Royal Westminster Ophthalmic Hospital has been purchased for the enlargement of Charing Cross Hospital, which it adjoins, but it is expected that two years will elapse before the building is available Both institutions are in need of enlargement, but until now neither could expand save by removal, and even as it is the cost of buying and converting the ophthalmic building is estimated at £100,000 It is intended to use it for heart cases and ear, nose and throat patients. The Ophthalmic Hospital has acquired a site in Broad-street, Bloomsbury, large enough for the erection of "the largest and finest ophthalmic hospital in London."

# Notes, Comments, and Abstracts.

## HEALING SAINTS.

THE amusing communication from Sir Wilmot Herringham on hagiological therapeutics (THE LANCET, March 13th, p 574) has stimulated a correspondent to send us the following note on an interesting statuary group of healing saints in Brittany He writes :—

"Perched on its rocky hill between two deep glens stands old grey Montcontour in Brittany. Before the days of the light railway the small town was one of the most primitive in an old-world countryside, for there the bare-footed peasant women still used the distaff and the coach-horses were led over the earthen floor of the inn kitchen into the stable beyond. Rudimentary beliefs die hard in such surroundings, and it is probable that even to-day the peasants of the district still offer prayer to the *saints guérisseurs* in the chapel of Notre Dame du Haut, about a mile away from Montcontour. These renowned saints are six in number and are represented by expressive images of fifteenth-century date. St. Lubin, to the right of the row of statues, is a bishop in full canonicals. His face is beatific in expression and he raises one hand in act to bless. He is invoked by the sick in all kinds of illness. Next to him is the tall figure of St. Mamert, whose office it is to cure diseases of the intestines. He is in a monkish habit and his abdomen, in appearance like a large flat oval loaf, is displayed outside his robe. He clasps this with his two hands, and his face expresses suffering A bishop with crozier and open mass book directly on his left is St. Méen, patron of the demented Then comes a little dapper huntsman armed with a spear and reminiscent of Chaucer's Canterbury Pilgrims. This is St. Hubert, who is good against dog bite, especially in cases of hydrophobia. St Livertin, fifth in the row, is a tall priest. He is invoked by those who suffer from headache, and his functions are well expressed by his finger-tips, which are laid to his temples. The pose suggests facial neuralgia, and this is probably the ailment most in vogue among a hardy people not otherwise worried by head troubles. Most curious of all this sextet is the last saint in the row This is St. Honarniole, who guards against fear. The sufferer from phobias of various kinds prays to him, and he wears a reassuring expression and appears to be walking cautiously forward supported by two long staves, one in each hand His long hair, beard, and dress suggest the layman, and his name indicates a purely local celebrity."

With reference to the exact connexion between the healing saints of early Christianity and mediæval days and the healing divinities of the classical era our correspondent writes: "That healing saints are certainly traceable to a pagan original was well shown by the late Prof. Tylor in his 'Primitive Culture.' In the chapters on Animism he cites two prime instances of this process of transition. Thus St. Theodorus has apparently succeeded Romulus as the patron of sickly infants, his church occupying the site of the little round temple at the foot of the Palatine, whither the mothers of ancient Rome brought their children to be presented to the founder of the city, who had been deified as propitious to their health and safety. In his famous 'Letter from Rome,' whose sceptical tendencies got him into trouble, Conyers Middleton, Bentley's bitter adversary, describes how he used to look in at the church of St. Theodorus and see groups of women, each with a sick child in her lap, sitting in silent reverence before the altar of the saint. The ceremony of blessing children, especially after vaccination, may still be seen there on Thursday mornings. SS. Cosmas and Damianus are generally acknowledged to owe their recognised office as healing saints, and especially of plague, to a similar train of events. They were martyrs who suffered under Diocletian at *Aegeae in Cilicia.* Now this place was one of those particularly celebrated for the worship of Æsculapius, in whose temple incubation—i.e., sleeping for oracular dreams—was practised. 'It seems,' writes Tylor, 'as though the idea was transferred on the spot to the two local saints, for we next hear of them appearing in a dream to the Emperor Justinian when he was ill at Byzantium. They cured him, he built them a temple, their cultus spread far and wide, and they frequently appeared to the sick to show them what they should do' SS. Cosmas and Damianus were thus manifest descendants of the old Asclepiades. According to legend they had been physicians before their martyrdom, and they became the patron saints of the profession of medicine."

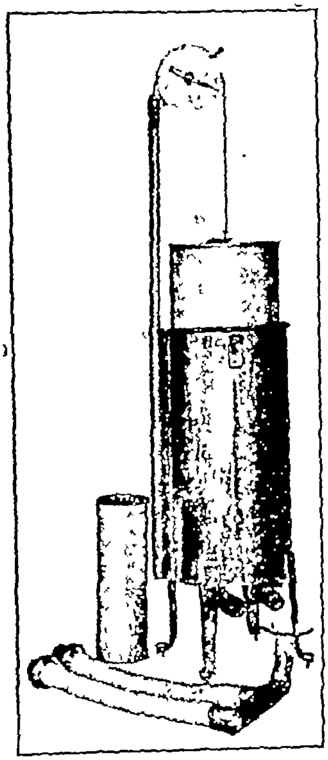
## AUSTRALIAN HOSPITALS.

THE growing pressure upon hospitals which is creating so difficult a problem at home is being experienced also in the Commonwealth. The report of the Public Health and Hospitals Department of Western Australia for 1923 and 1924, which has just reached us, shows that during that period in the larger hospitals, especially that at Perth, the increased demands upon accommodation have reached serious dimensions. In the country districts, some of which have no hospital provision, the need has become so great that 18 new hospitals have been opened. There are three public hospitals in the State with an average of 520 beds occupied in 1924, an increase of nearly 20 per cent. since 1921. The average of 81 occupied beds in the 37 assisted hospitals shows an even larger growth. The same tendency is noticeable in the 24 Government hospitals, the number of patients treated having been 5900 in 1924 as compared with 3877 in 1922. We note that the daily cost per patient in these hospitals was 9s. 4½d., which is a reduction on previous years. The death-rate of Western Australia in 1923 was 8·41, a "record" for the Commonwealth.

The report of the *Royal Prince Alfred Hospital, Sydney*, for the year ending June 30th, 1925, shows that 7740 patients were admitted, and that their mean residence was 24 days. In the out-patient and casualty departments 47,000 persons were treated. The work of the pathological department greatly increased, and there was also a large increase in the use of insulin. The whole question of the treatment of tuberculosis in the Sydney hospitals is under consideration, and it appears to be probable that a central bureau will be established for the better coördination and direction of the work throughout New South Wales. Owing to the change in the medical curriculum, which now extends over six years, and a falling off in the number of students entering the medical school, the number of students attending the hospital was only about half that of the previous year.

## ESTIMATION OF BASAL METABOLIC RATE.

THE estimation of basal metabolism by the British "Benedict" portable metabolism apparatus is a *closed circuit* method in which the oxygen consumption is measured directly. Its simplicity, rapidity, and accuracy are causing it largely to supersede, at least for clinical purposes, the standard *open circuit* method of employing the Douglas bag and gas analysis. The latter, although the choice for really exact scientific work, is too time-consuming and laborious for ordinary routine at the bedside. And further, unless the operator is specially skilled and exceedingly careful wrong results are apt to be obtained, and perhaps not infrequently results very far wide of the mark. The technique required for the method is less involved and laboratory assistance is unnecessary, but, nevertheless, the same careful attention to details must be observed. The apparatus is conveniently portable, and as regards accuracy, the all-important point, it has been shown that in competent hands results are obtained that compare well with those of the Douglas bag method.



The apparatus illustrated consists of a spirometer cylinder (6½ litres capacity), balanced by a weight-and-pulley arrangement suspended over a double-walled cylinder, and dipping into a water-seal between the vertical walls. The spirometer is filled with oxygen and the patient inhales from, and exhales into, this enclosed circuit through two breathing tubes provided with inlet and outlet valves. Within the inner cylinder is a container of soda-lime (calsoda) which removes all the carbon dioxide. Therefore, the difference between the readings taken on the self-registering dial of the pulley-wheel at the beginning and end of the test gives the amount of oxygen consumed. Corrections are made for temperature and pressure, and a comparison with figures for normal persons of the same weight, height, and age shows whether the metabolic rate is up or down. Three or four 4–7 minute tests are generally required, and since gas analysis and other laboratory determinations are unnecessary, results can be had a few minutes after finishing the tests. Two modifications in this apparatus on its immediate predecessor —the "Handy" Sanborn, described and recommended by Mr. T. C. Hunt in THE LANCET of Jan. 23rd (p. 172)—should be favourably mentioned: (1) the introduction of inlet and outlet valves prevents any re-breathing of $CO_2$; (2) the inertia of the spirometer cylinder is practically eliminated by the counterpoise pulley arrangement.

Considerable experience with the method has shown that in addition to the ordinary care in technique special attention should be directed to the following points, as it is here that error is most liable to creep in: (1) The entire apparatus should be thoroughly tested for leaks. (2) The spirometer cylinder must be accurately balanced by means of the four levelling screws and the pulley counter-weight. (3) The most vital part of the apparatus is the carbon dioxide absorber, and it demands systematic examination, say, once or twice a week, or oftener if needed. The capacity of the calsoda to absorb $CO_2$ should be tested for by filling the spirometer-bell with expired air, plugging the mouth-piece and causing the contents to pass out via the oxygen inlet-tap and bubble through lime-water. If the calsoda is all right no cloudiness will occur. (4) It is essential that the readings at the beginning and end of a test are taken in the course of periods of steady regular fall in the volume, as shown by the hand on the dial. For this purpose a stop-watch is of great service, as readings may then be taken at any fraction of a minute when the breathing is satisfactory and accurate calculations made.

The British "Benedict" apparatus is sold by Herbert E. Kendrick, 342, St. John-street, London, E.C. 1.

## VOCAL THERAPY FOR DISABLED MEN.

AMONG the various organisations for bringing help to the minds and bodies of the men still disabled after the war, the Vocal Therapy Society, whose report for 1924–25 is to hand, plays a modest but nevertheless a decidedly useful part. The report states that its aims are: "1. To promote through speech, song, and efficient breathing the physical and mental health of sick, wounded, and disabled sailors, soldiers, and airmen in hospitals and centres of discharged men. 2. To adopt under medical advice the most effective methods of individual and class training in singing, speaking, and breathing. 3. To select voluntary and paid teachers with the necessary high qualifications. 4. In furtherance of these aims to form the hospital and other ex-Service singers into choirs." The beneficial results of correct instruction in breathing and voice-production are undoubted in those suffering from speech-defects, injuries of the jaws, and paralyses; but, apart from these more obvious cases, many of the chronically disabled patients are awkward, self-conscious, and miserable. It appears from the report, as would be expected, that the singing and dancing classes have given such patients an interest, relieved their shyness, and improved their morale. The society has a number of distinguished musicians and medical men upon its committee, and employs half a dozen teachers; it cannot afford more, and its activities have had to be curtailed owing to decreasing funds. But there are still, unfortunately, many thousands of disabled men, and we commend this society to the interest of the philanthropic.

## *THE NORTH-WESTERN NATURALIST.*

WE heartily congratulate Mr. A. A. Dallman on the first number of this successor to the *Lancashire Naturalist* which has recently appeared under his editorship. There is evidently no dearth of good material in Lancashire, Cheshire, North Wales, and the neighbouring parts, and the activity of the workers will reciprocate with an adequate publication of their results to promote one of the most humane of human interests in which medical men have always taken a leading part. The number contains a sympathetic notice of the late Dr. H. Drinkwater, who filled up the spaces in a distinguished career as a doctor at Wrexham with notable contributions to botany, medical biography, and Mendelian heredity. Prof. A. E. Boycott has a short article on a unicellular alga apparently parasitic in a water-snail, and there are many notes of biological and antiquarian interest. If the present standard can be maintained we do not doubt the success of the new venture. The most substantial paper is a survey, along ecological lines, of the daddy-long-legs of Carnarvonshire by Mr. H. F. Barnes.

## *"C.P."*

WE have been used to this abbreviation for many years in this country as signifying Clerk of the Peace, Common Pleas, Court of Probate, and last, but not least, Carter Paterson and Carriage Paid, and in technical circles as Chemically Pure. We now see that C.P. in the United States is to stand for "Council Passed," meaning, when affixed to a chemical product, that it has been approved by the Council on Pharmacy and Chemistry of the American Medical Association, and accepted by them for inclusion in new and non-official remedies.

# An Address
ON
# VISCERAL PAIN AND REFERRED PAIN.

*Delivered before the Oxford Medical Society on Feb. 12th, 1926,*

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THERE are problems in medicine which make a general appeal, and others of a more special character which cannot equally attract all minds. In choosing for discussion certain aspects of pain, I have hoped at least to avoid the imputation of specialism, for it would be difficult to conceive of a problem more universal and more appropriate to our art. Whether our inclinations be medical or surgical, or our thoughts cast in a physiological or an anatomical mould; whether our work be academic or more severely practical, there are features of the problem which can hardly fail to claim attention. To seek out the causes, to assess the consequences, and to encompass the relief of pains is for most of us a daily duty. Familiarity cannot—or should not—deprive the subject of its fascination or blind us to its difficulties.

If there is a fault in us bred of familiarity it is, I believe, the old fault of omitting to probe sufficiently deeply into causes; the fault of accepting the fact of common symptoms without explaining them. For this reason my remarks will be confined to a review of the present state of our knowledge of the nature and causes of some more familiar types of pain. Research into the subject does not commend itself to the experimentalist in the laboratory, for subjective phenomena are difficult to pursue in animals, and the varieties of pain which can be reproduced and studied in the healthy human being are of necessity limited. On the other hand, those who are engaged in the practice of medicine or surgery, and have the most frequent opportunities of observing the experiments in pain with which nature herself provides us, are usually so harassed by the exigencies of work that ordered observations are hard to accumulate and still more hard to analyse. Furthermore, the experiments often take months or years to march to their conclusion, and only too frequently they are not concluded at all. I think, however, it may fairly be urged that we owe—as we should do—our most valuable information relating to the mechanism and distribution of pains to the clinicians, and that it should rest with them to direct inquiries in the future, employing ever more careful method, and seeking scientific coöperation whenever possible. With the work of such men as John Hilton, Sir James Mackenzie, and Henry Head to reflect upon we do not lack for inspiration in this country.

It is with some diffidence that I approach the subject of local pain and referred pain in visceral disease, for if the more superficial pains are difficult to elucidate the deeply seated pains are more so. Moreover, the ground which must be covered is wide and beset with controversies. I shall confine myself to a consideration of pain associated with disease of the hollow viscera, for it is doubtful whether the solid viscera are possessed of any sensibility. My argument will be mainly clinical, and I must pray the physiologists and anatomists for leniency whenever my remarks seem to lack that precision which their more ordered sciences demand.

### THE MECHANISM OF VISCERAL PAIN.

To begin with, let me recall that there have been two main schools of thought in regard to the mechanism of a visceral pain. The first school, basing its views on the work of Lennander[1] and having the late Sir James Mackenzie[2] as its most vigorous protagonist, concludes that pain is not felt in the viscera, but that it is referred to the somatic tissues supplied by the same segment of the cord which supplies the viscus in question. The latest edition of a well-known physiology text-book still perpetuates this view. The second school, supported by Ross[3] and Hurst[4] and perhaps the majority of physicians, while recognising that visceral disease may be accompanied by referred somatic pain, contends that the viscera themselves are capable of feeling pain in the presence of appropriate stimuli.

I shall endeavour to support the following hypotheses:—

1. That there is a true visceral pain felt by the viscus.

2. That visceral pain is due to an abnormal increase in the tension of the muscular element of the wall of the viscus, this increased tension resulting either from contraction or from a failure on the part of the muscle-fibre to relax adequately in the presence of increased intravisceral pressures.

3. That visceral pain when occurring alone, or dissociable from attendant somatic pains, may be accurately localised by the patient.

4. That referred somatic pain and tenderness—e.g., the viscero-sensory reflexes—and the associated viscero-motor reflexes, although they may accompany a severe visceral crisis of mechanical origin, more frequently express an inflammatory lesion of the viscus.

5. That, when persistent, they invariably express organic disease of the viscus of an inflammatory kind.

I shall illustrate my remarks by referring to painful disorders of the stomach, the gall-bladder, the appendix, the intestine, the kidney and ureter, the uterus and Fallopian tubes, and, finally, of the heart and arteries, but I would first draw your attention to certain general considerations.

### *Normal Sensibility of Hollow Organs.*

If it be claimed that visceral pain is not produced in the viscus it seems pertinent to inquire where the normal sensations peculiar to certain viscera are felt. I have never seen it suggested that these normal sensations are referred to the somatic tissues, nor does daily experience suggest that they are felt elsewhere than in the viscus. The heart and aorta, excepting for the sensations of præcordial fullness and retrosternal oppression experienced during violent effort or emotion, may be said to be insensitive under physiological conditions. In the case of the stomach we recognise the gastric elements of the appetite and hunger sensations, and the sensations of fullness or repletion. These have been clearly related with the tonic and peristaltic activity of the stomach wall, and the work of Carlson[5] and Hurst[4] would seem to indicate that the sensations depend on the state of tension in the gastric muscle-fibre. Of the appendix and gall-bladder we are quite unaware in health. Of the intestine we are aware whenever local distension with flatus occurs. The rectum clearly appreciates states of fullness, at times of urgency amounting to pain, and most of us would agree that its sensations are deeply and not superficially situated. The sensation of the desire to micturate is felt in the urethra and in the bladder also when it is over-distended. All these physiological sensations are related to increasing pressure on the walls of the viscus and are relieved by evacuation. Menstrual pains are felt locally, but are frequently accompanied by a more superficial sacral pain. It is, however, worthy of note that a state of congestion akin to the effects of inflammation is present in this condition in addition to increased muscle tension, and that no equivalent congestion is present during the normal functional activity of other hollow viscera.

Lennander[1] showed that the abdominal viscera when exposed could be pricked, pinched, cut, or burnt without causing pain, and we are all familiar with the insensibility to these stimuli of a colotomy loop. Waugh[6] has recently shown a similar insensibility in the case of the heart. It is further obvious that the gastric and intestinal mucosa have no tactile and very little thermal sensibility, for if they had, we should be far more conscious of ingested foods and fluids, of enemata, and of the normal processes of digestion. Hurst[4] and his collaborators demonstrated by experiment the insensibility of the gastric and rectal mucosa to tactile, thermal, and chemical stimuli, and Hilton[7] long ago remarked on the insensibility of the rectal as compared with the anal mucosa. These observations support the contention that, if the hollow viscera are sensitive, it is not their serous or mucous coats but their muscular coats which appreciate the sensations. Those who contend that the viscera are insensitive seem to have paid too little regard to the fact that special organs respond only to special stimuli. Thus the eye appreciates light and not sound; the skin appreciates touch, temperature, and traumatic pains, all of which it is physiologically essential for it to appreciate; the skeletal muscles appreciate position and tension and the strength of opposing forces and (in states of extreme tension) pain, but they are not, I believe, sensitive to cutting, pricking, or burning. There is no reason for the viscera to appreciate tactile or thermal stimuli, but it is vitally necessary for them to appreciate states of fullness and emptiness. By analogy it seems reasonable to insist that the plain muscle of the hollow viscera is endowed with the same sensibility, positive and negative, as the skeletal muscles; in other words, that *visceral sense is muscle-sense.* The sensations of fullness or emptiness are thus parallel with the sensations of posture and tension in a limb. Pain (whether in skeletal or plain muscle) results when tension is greatly exaggerated in one manner or another. The one common factor present in all cases of visceral pain is an increase in intravisceral pressure and in muscular tension. The relieving factor, whether it be the passage of a gallstone in biliary colic, the ingestion of food in hunger pain, or the peripheral vaso-dilatation on administration of amyl nitrite in angina pectoris, is invariably a factor which reduces intravisceral pressure.

What further evidence have we that visceral pain is deeply felt and not somatic? It will be agreed that ordinary stomach-ache and intestinal colic give the impression of being felt internally. Those who have experienced severe visceral pains of mechanical origin, such as renal and biliary colic, are agreed that these sensations seem to be deep to the body wall. I think it is also true that the majority of non-inflammatory visceral pains (unless they fall into the group of the severe visceral crises) are but rarely accompanied by reflected superficial pain or soreness, and in the case of inflammatory lesions we may observe, as I shall show, referred somatic pain or tenderness occurring in the absence of local visceral pain, and thus suggesting that the causal processes are not identical.

Guarded though we should be in accepting the observations of our patients as accurate evidence, we must, nevertheless, attach importance to certain "gestures" which they employ in indicating the seat of their pain. These gestures do not, as a rule, apply to a somatic segment, but to the surface-marking of the viscus. Thus, in describing anginal pain the patient places his clenched hand to the sternum as though to indicate a median or aortic origin for his pain, and, perhaps, incidentally, to imply its gripping character. A cardiac pain, on the other hand, is indicated by applying the flat of the hand to the submammary region. The pain of gastric ulcer is indicated with the tips of two or three fingers applied to the mid-epigastric point or occasionally just to the left of this point; the pain of duodenal ulcer by a similar demonstration frequently just to the right of the mid-line. The gesture of renal colic is made familiar by the pictorial advertisements of a certain proprietary back-ache pill; the hand grasps the loin usually with the fingers over the back and thumb in front, as though to imply that the pain requiring subjection is rather more posterior than anterior and deeply situated in the actual position which the kidney occupies. The localisation of pain in gall-bladder and appendicular disease (when there is no confusion due to associated inflammation or gastric and intestinal disturbance) is remarkably accurate. The position of a calculus impacted in the ureter may also be accurately shown when distraction by concurrent renal colic or other symptoms is not too influential. Intestinal pains are less easily localised, but here the actual position of the painful contraction is variable, for intestinal colic is not confined to one spot as is the case with biliary or renal colic. Small intestine pains are usually felt around the navel, and colonic pains between the navel and the symphysis pubis. When, however, obstruction occurs at a more or less fixed point such as the hepatic, splenic, or sigmoid flexures, then the localisation is commonly precise. One of the most recent text-books of physiology, in the very brief references to this subject which it makes, asserts that visceral pain is vaguely and inconstantly localised. I believe that clinical experience teaches otherwise, if only we are careful to dissociate the primary or local from the secondary and referred phenomena.

It will be conceded that the reflected phenomena of visceral disease are best demonstrated in association with the very severe forms of visceral pain or in association with inflammatory disease. The arm pain of angina, the subscapular pain of cholelithiasis, and the testicular pain in ureteric colic are the classical examples of the former group; of the latter the cutaneous hyperalgesia and muscular guarding found in appendicitis or in relation to a chronic gastric ulcer are the best examples. It is worthy of note that these reflected phenomena rarely accompany visceral disease of a functional kind; in other words, that they are generally associated with local organic changes. In the majority of fatal cases of angina pectoris there is found some disease of the first part of the aorta or coronary vessels, and we know that, although the sensation of retrosternal oppression can be reproduced in health by vigorous exercise upon a frosty morning, the arm pain is not so reproduced and, since the vessels are capable of relaxation, local distress is never agonising. In stomach-ache due to extragastric causes I have not found cutaneous soreness or muscular guarding. With the subscapular pains of gall-stones it may be pleaded that the pain is as much an effect of the cholecystitis as of the stones; certainly, an *identical subscapular pain occurs* in cholecystitis without gall-stones. In the testicular pain of calculous ureteric colic the ureteric mucosa must be ulcerated or inflamed and testicular pain may occur without any attack of "colic." It is upon observations of this kind that we may base the conclusion that *visceral pain expresses a perturbation of visceral function (which may or may not be due to local organic disease), while the somatic phenomena generally express a structural lesion of the wall of the viscus.*

Although his writings would lead one to suppose that he doubted the existence of true visceral pain, I am inclined to think that Sir James Mackenzie latterly accepted the sensibility to pain of the hollow organs, for in a letter which he wrote to me in 1922 he included the following sentence: "It is to answer this question that I have spent a long inquiry and have come to the conclusion that the only known stimulus that produces pain in the tissues which are supplied only by the autonomic nerves is the contraction of muscle." Perhaps we may add the suggestion that a failure to relax in the face of increased pressures produces the same effect—namely, increased tension and so pain in the muscle-fibre.

### GASTRIC PAIN.

My interest in the subject of visceral and referred pain was first stimulated by studying cases of gastric and duodenal ulcer. The pain of duodenal ulcer, usually gnawing or aching or described as a feeling of great pressure, occurs when the stomach is in the posture of approaching emptiness, but, through reflexly enhanced tonic action, its muscle becomes and remains abnormally taut. This pain is relieved when the stomach adapts its posture or relaxes to accommodate introduced food or fluid, or when the "resistance" is withdrawn and intragastric pressure reduced by complete emptying. The pain of gastric ulcer occurs when the tension in certain muscle-fibres, reflexly tautened or structurally shortened by the ulcer, is further augmented by the introduction of food. In cases of ulcer we are frequently told by the patient that these spontaneous pains are accompanied and often followed by local epigastric soreness or hyperalgesia. In a large proportion of cases we discover deep somatic tenderness. In a much smaller proportion we find superficial and deep hyperalgesia (or soreness) of the skin, together with muscular guarding of one or other rectus and exaggeration of the abdominal reflex on one side. These signs are more likely to be demonstrable if the patient has recently had an attack of pain or is in pain at the time of the examination. On the other hand, these signs may persist for days after the subsidence of all spontaneous pain as the result of appropriate treatment in bed, and they may not finally disappear for a week or fortnight. The purpose of these reflexes is surely protective, so why should they only be present when spontaneous pain is present? They disappear completely when the ulcer is healed as judged by the disappearance of occult blood from the stools, and they are not present in cases of established pyloric stenosis. They are, therefore, probably due to stimuli constantly passing from the ulcerated area to the cord, and, although they may be brought to light or reinforced by them, are not directly attributable to the painful contractions in the stomach wall which cause the visceral or deeply seated pain. These reflex signs are more constantly present with the deeper and more chronic ulcers which invade the muscular coat. Although the pain of cancer of the stomach equals or surpasses in severity the pains of gastric ulcer, it is much more rarely accompanied by somatic signs. Thus, while it is difficult to palpate deeply in many ulcer cases on account of somatic tenderness and muscular guarding, in cancer the muscles are often relaxed and the tumour can be felt without causing flinching or pain. I believe this apparent discrepancy may be related to the fact that simple ulcers erode and destroy the muscle-fibres in which the nerve-endings ramify, whereas the growth merely infiltrates between the fibres—a histological distinction which is regarded as of diagnostic import by pathologists when considering the nature of large chronic ulcers. When "guarding" is present in cancer of the stomach it is usually bilateral; in gastric ulcer it is usually left-sided, and in duodenal ulcer right-sided. Pain is referred to the back over the lower ribs, particularly in the case of posterior ulcers eroding the pancreas. Somatic signs are rarely present in simple gastritis, because the lesion is too superficial and does not involve the muscular layer. The following cases illustrate some of the points to which I have referred.

CASE 1.—J. D., male, aged about 50, was diagnosed clinically and with the aid of X rays, test-meal, and the presence of occult blood in the stools as having a duodenal ulcer. On admission to the ward he had deep cutaneous soreness, deep tenderness over the right upper rectus, and the abdominal reflex was exaggerated in the right upper quadrant. The deep soreness was very marked and at times superficial soreness was also present, the patient volunteering the statement that the weight of a book as he read in bed and even that of the bed-clothes was sometimes insupportable. The signs persisted for some time after he lost his pain, but then gradually became less and less distinct. *Deep tenderness was the last sign to disappear, and its complete disappearance coincided with the return of negative occult blood reports from the clinical laboratory.*

CASE 2.—A young man, aged 27, was diagnosed as gastric ulcer at out-patients and the X ray report confirmed, stating that there was a penetrating ulcer of the lesser curvature. On his first attendance he was free from pain and the only sign demonstrable was deep mid-line tenderness in the epigastrium. On his next visit he was actually in pain, and he showed, in addition to the mid-line tenderness, deep cutaneous soreness in the mid line, left-sided exaggeration of the abdominal reflex, and left-sided guarding.

It is very rare in my experience for superficial soreness, elicited with the head of a pin as Head [6] described, to be present in gastric disease. In distinguishing between a gastric and a duodenal ulcer the horizontal level of tenderness is less reliable than the right or left sidedness of the viscero-sensory and viscero-motor signs.

### PAIN IN GALL-BLADDER AND BILE-DUCTS.

The pain of biliary colic is referred to the gall-bladder point, corresponding with the ninth costal cartilage, or sometimes more centrally below the xiphisternum. It is almost invariably a crescendo pain. It is often difficult to dissociate the attendant gastric pain from the true gall-bladder pain. In association with gall-stones and chronic cholecystitis it is not uncommon to find a recurrent gastric pain, often worse at night, simulating the pain of ulcer and dependent upon similar reflex disturbances of gastric motility. The viscero-sensory accompaniments of cholecystitis—whether occurring with or without gall-stones—include superficial and deep soreness in the right upper quadrant of the abdomen, right subscapular and interscapular pains, and tenderness over the middle dorsal spines and along the course of the eleventh right rib. Muscular guarding, amounting in acute cases to actual rigidity, may also be present, and, in subacute cases, exaggeration of the abdominal reflex on the right side. "Shoulder pain," so often referred to as a *sign of* gall-stones, should be reserved for the description of pain referred along the phrenic nerve to the C.4 area in cases of inflammation involving the *under surface* of the diaphragm or in diaphragmatic pleurisy. It is best seen in liver abscess and subphrenic abscess and is sometimes an early symptom of a perforating gastric ulcer. I have never met with it in uncomplicated gall-stones or cholecystitis. I shall here give the notes of one case only, that of a medical man, who helped me with careful observations.

CASE 3.—Patient first came under observation on account of severe attacks of epigastric pain of unexplained causation. At the time of investigation he was free from all symptoms. A week spent in thorough investigation by the various modern methods failed to clear up the diagnosis. *The only positive sign was slight tenderness over the fifth and sixth dorsal spines, and the possibility of gall-stones was on this account considered.* A few weeks later I saw him in an attack with a palpable gall-bladder and, on the following day, a rigid right upper rectus and friction sounds below the rib margin. At operation a very much thickened and inflamed gall-bladder filled with stones was found. Some months after the operation he had one further attack of biliary colic, perhaps due to a stone left in the dilated duct. Later still I saw him with troublesome referred pains in the mid-dorsal region unaccompanied by abdominal colic or epigastric pain. I thought that these pains were due to persisting infection in the dilated ducts, and with hexamine the symptoms were at first relieved. Later, however, they recurred and hexamine failed to bring relief. The patient has since written to me in the following words: "One day it occurred to me that this pain was purely a dragging pain and might be due to inability of the liver to get rid of its secretions through a kinked duct. I decided to sleep on my left side. I could not do this before, but the difficulty was overcome. The effect was excellent. I never get that pain now unless I happen to turn on my right side, then it comes next day. I have tried the trick again and again and there can be no doubt of cause and effect . . . ."

It is difficult in this case to decide how far the referred phenomena should be regarded as an effect of inflammation and how far as an effect of mechanical distension of the ducts. In the first instance they were seemingly relieved, as I have seen them relieved in other cases, by treatment directed towards disinfection of the biliary tract. Latterly they were relieved by a simple expedient likely to facilitate evacuation of the duct. Perhaps it is fair to suggest that both factors played their part, just as mechanical and inflammatory factors are shown to buttress one another in promoting the somatic signs of gastric ulcer. Hilton [7] was the first to give an anatomical explanation for the frequent association of subscapular and interscapular pain with diseases of the upper alimentary tract, pointing out the connexions between the nerve-supply to the stomach, liver, duodenum, and pancreas (great splanchnic and solar plexus), and the fourth, fifth, and sixth dorsal nerves.

### APPENDICULAR PAIN.

Surgeons will agree that among the varieties of disease collected under the heading of acute appendicitis there are two broad clinical types which it is essential to distinguish. The first is the "inflammatory type" in which, following upon infection of the mucosa or submucosa, there develops general redness and inflammation of the organ with or without obvious pus formation. In this type, in addition to visceral pain, cutaneous hyperalgesia, muscular guarding or rigidity, and pyrexia are commonly present. If reflex signs are carefully sought for they may be found in some of the mildest and earliest cases in which it might otherwise be difficult to arrive at a diagnosis. The second type is the "gangrenous" appendix, which may give rise at first to exceedingly severe visceral pain, but not infrequently with a complete or almost complete absence of somatic signs and pyrexia. In the absence of these signs the diagnosis is sometimes unhappily postponed, and yet it is the type above all others in which early operation is imperative. In either type there may be a sudden disappearance of the visceral pain when the appendix ruptures—a strong point in support of the contention that visceral pain is an effect of increased tension. In the gangrenous type we have a lesion in which not only the lumen but also the circulation of the organ has become obstructed. Possibly the absence or paucity of somatic signs in these cases may be explained by the mechanical nature of the lesion in the early stages and by the ischæmia of the tissues involved in the later stages.

CASE 4.—A medical student aged 22 came to me some years ago with the following history: Three months previously he had had a sudden attack of pain in the epigastrium which later settled into the lower abdomen. He stated that there was tenderness on the right side and round the navel, that he vomited, and his temperature rose to 99·4° F. Forty-eight hours later he was quite well. He remained fit for a month and then had a similar attack in which there was pain and tenderness in the epigastrium. Ten days before he saw me he had had a third attack which started absolutely abruptly at 3 P.M., with pain in the epigastrium which doubled him up and made him feel cold. At 10 P.M. the pain departed with absolute suddenness under the following circumstances. He was on his way home to his rooms and met a registrar from the hospital who told him how ill he was looking. He said: "Yes, I have a bad stomach-ache . . . . No, I have not, it has gone." At no time had the pain been referred to the back, or groin, or testicle. Between the attacks he was perfectly fit in every way, and at the time of his visit to me he was quite free from symptoms. My physical overhaul was completely negative except for showing local deep tenderness at McBurney's point. A radiographic examination of his alimentary and urinary tracts was negative. Bastedo's test produced no localised pain. A week later all tenderness had disappeared and he felt perfectly well. I regarded the attacks as probably appendicular, and told him that at the first sign of any recurrence he was to come up to the hospital. As it happened the next attack started in the middle of the night, the pain was of great severity, and he could not attract the attention of anyone in the house. He came to see me in the morning looking pale and ill. There was no pyrexia, no cutaneous soreness, no rigidity, and only very slight tenderness in the right iliac fossa; the pulse was not accelerated, but as he lay on my couch he preferred to do so with the right knee drawn up. I had him admitted to hospital at once, and Mr. R. P. Rowlands removed a black gangrenous appendix. At its proximal end there was a small thorn impacted in the lumen of the organ. Although appendicular disease seemed more probable, the curiously abrupt onset and departure of pain in the early attacks and their epigastric reference had made me consider the alternative possibility of one of the major colics. With such a history before me now I should hardly dare to await events.

### INTESTINAL PAIN.

Intestinal pains are generally griping and rhythmically recurrent, but with partially obstructive lesions in the large bowel the pain may be more sustained. Excepting with ulcerative or inflammatory lesions it is unusual to find cutaneous soreness or muscular guarding in intestinal disease. These signs may be present with tuberculous ulceration of the ileo-cæcal region and with diverticulitis of the colon, but they are rare in mechanical obstructions and in cancer. Head[9] points out that they may be present in typhoid fever, but are absent in lead colic, yet another observation in favour of the suggestion that visceral pain is an effect of muscular tension, while for referred pain or tenderness the added effect of inflammation is necessary.

### RENAL AND URETERIC PAIN.

One of my most instructive lessons in visceral pain and referred pain was provided by a personal experience of renal colic. I must apologise for referring to this experience and should hesitate to do so did I not believe that personal records by medical men have a certain value of their own.

CASE 5.—In February, 1922, I began to have attacks of left-sided renal colic and between then and July of the same year, when I passed a small calculus, I had four or five major attacks and about a dozen minor ones. I was satisfied that both the renal pain, which was always crescendo in character, and later the ureteric pain, were deeply situated. At an intermediate stage the latter appeared to me to be just deep to the sacro-iliac joint, but shortly before the stone passed into the bladder it was felt low down in the left iliac fossa. One bad attack was relieved by morphia and atropine when morphia alone had failed. I was told by a colleague that my loin muscles after attacks of renal pain were hard on the affected side and they certainly remained tender for a day or two, after the manner of a muscle which has been over-used. Jolting or gentle thumping of the loin were painful, but deep palpation caused no discomfort. At no time did I discover any cutaneous hyperalgesia. There was frequent referred pain into the left testicle during the long period in which the stone was lodged in the lower end of the ureter, and this occurred quite independently of ureteric or renal crises. There were several bouts of hæmaturia, and red cells and latterly leucocytes were always present in the urine when examined. It seemed to me that the referred testicular pain was an effect of local ulceration of the ureter, although its intermittency suggested that ureteric peristalsis played a contributory part.

I have not encountered testicular pain in cases of renal colic due to an aberrant vessel, and I do not think it occurs in cases of stationary stone in the kidney. It is therefore to be regarded as a ureteric and not a pelvic or renal reference.

### UTERINE AND TUBAL PAIN.

The number of obstetric and gynæcological cases which comes my way is small, and I have few opportunities of studying their pains. As with dysmenorrhœa and parturition, so with organic disease of the uterus, back-ache in the sacral area is a common association. Pain down the front of the thighs to the knee, in the area supplied by the eleventh and twelfth dorsal and first three lumbar segments, is an interesting reference accompanying disease of the pelvic organs which I have encountered once or twice, and which Marcus [10] has particularly associated with disease of the tubes, citing several cases of salpingitis and ectopic gestation. Head [11] had concluded that the eleventh and twelfth dorsal and first lumbar were the segments involved in certain uterine cases. Hilton [7] long ago suggested that some of the so-called hysterical pains in the hip and knee might depend upon reference from the pelvic organs, and traced the path of the impulses via the sacral and lower lumbar ganglia to the sacral nerves and obturator.

### CARDIAC AND ARTERIAL PAIN.

When we consider the prevalence of cardiac disease it must be admitted that cardiac pain is a comparatively rare symptom. It is, perhaps, more common in functional derangements than in cases of valvular disease or obvious hypertrophy or dilatation. It is felt in the submammary zone and is sometimes accompanied by referred tenderness in the præcordial area.

It is remarkable that our knowledge of the cause of anginal pain has remained so indeterminate that observers of the eminence and experience of Clifford Allbutt and Mackenzie were in disagreement even as to the seat of its production. Clifford Allbutt,[12] Wenckebach,[13] and others have claimed an aortic origin; Mackenzie [2] (attributing it to muscular fatigue) a cardiac origin; and Danielopolu[14] a coronary origin for angina pectoris. The arguments weigh heavily in favour of an aortic or coronary, or at any rate an arterial origin, for the pain, and in support of this hypothesis we can enumerate: 1. The sternal situation of the pain—over the aorta or base of the heart and not in the præcordial area. 2. Its occurrence as an early symptom of syphilitic aortitis. 3. Its association with aortic but not with other valvular forms of disease, and its association with thoracic aneurysm. 4. Its absence in the majority of cases of myocardial disease and heart failure. 5. Its propagation by actions which cause a rise in intra-arterial pressure and its relief by vaso-dilatation. 6. Its not infrequent association with hyperpiesia before the development of cardiac failure. 7. Its spontaneous relief when the heart muscle fails so that an adequate pressure for the production of the pain can no longer be maintained. 8. Its segmental reference which, as Wenckebach[13] has argued, does not—on the basis of Head's work—correspond accurately with the segments supplying the heart. 9. Its close resemblance to other forms of arterial pain.

It seems reasonable to argue that angina pectoris is due to an increase in tension in the wall of the aorta or coronary vessels, or both, *depending not upon spasm but upon a failure to relax* in the face of the increasing pressures and demands which accompany increased cardiac work. Recent observations have shown that the *status anginosus* (or *sustained* anginal pain) is due generally—perhaps always—to thrombosis or embolism of the coronary arteries. We have, therefore, an apt analogy for popliteal embolism in the status anginosus, both being conditions in which *the pain is agonising and sustained*, in which the vessels are structurally damaged by stretching and inflammation, and the parts supplied by the affected vessel undergo ischæmic necrosis. Have we not an equally apt analogy for angina cruris* in angina pectoris, both being conditions in which the patient is "pulled up" and prevented from walking further by *a severe but passing pain from which he is free at rest*—a pain due, I believe, to a loss of resiliency and adaptability in the vessel wall, which is only disclosed when the muscle supplied by the vessel calls for an increased blood-supply? The referred pains are more intense and more persistent in status anginosus than in ordinary angina, just as they are more intense and persistent with an inflamed gall-bladder than after an attack of uncomplicated gall-stone colic. As with angina pectoris, so with angina cruris, we meet with "benign" cases in which the symptoms recur during months or years without any serious developments or in which recovery may take place. I believe that there are "functional" types of both conditions dependent on a neuro-muscular disturbance, and I have notes of cases in which tobacco or emotion seemed to be the underlying cause. When the symptoms depend on local organic disease then only do the graver complications follow. The areas to which pain may be referred in *angina pectoris* and status anginosus include the left breast, the inner side of the left arm to the elbow or wrist or even into the fingers, more rarely the right arm or both arms, the neck, and the jaw. The segments particularly involved are the last cervical and upper two or three dorsal segments.

## PRACTICAL APPLICATIONS OF THE STUDY OF PAIN.

Thus far my remarks have been chiefly concerned with an attempt to support (in the case of each viscus) the hypotheses set forth at the beginning of this lecture. Truism though it may seem, it is now time to remind ourselves that a working knowledge of the causes of symptoms is of great practical importance, perhaps of even greater importance to the physician than a knowledge of the causes of disease. Of all symptoms pain is the most important. In the earlier stages of our education a great deal of time was and still is quite properly devoted to the study of physical signs—that is to say, of the objective evidences of structural disease. But symptoms, being invisible and impalpable, are too often thought to be poor material for class demonstration. In practice we find that only a small proportion of our cases have physical signs; that the development of signs is nearly always preceded by a period of symptoms; and that again and again we have to base our findings on the anamnesis rather than on the physical examination. It thus becomes necessary for us to educate ourselves *in methods of analysing pains as accurately as possible*, in collecting information about their character, situation, and attendant phenomena, and the factors by which they are intensified or relieved. We have, no doubt, been taught that certain pains have certain degrees and qualities; that the severe crises like angina and renal colic are "agonising" and "unbearable"; that the "spasmodic" types of pain, as Heberden[14] remarked, are peculiarly liable to come on in the middle of the night or the early hours of the morning; that pain in the lateral organs does not as a rule cross the mid-line; that intestinal pains, like the normal peristaltic movements of the intestine, are rhythmical; that certain pains are constantly relieved by certain acts, such as the pain of duodenal ulcer by taking food; that cardiovascular pains accompany effort; that gastric pains are related to eating or fasting. Later we discover for ourselves that many other pains and discomforts, previously but dimly understood, may have their nature revealed by careful analysis, although the most experienced of us must again and again admit defeat. With hospital patients, and with private patients who can afford such luxuries, it is now possible to subject the more puzzling problems to fuller investigation and so to correct or modify an original clinical opinion. The possession of these new facilities should never, however, excuse us from careful clinical inquiry. The "pathology of the living" studied on the operation table is also a valuable corrective, but operation should rarely be resorted to for purposes of diagnosis, and the too frequent employment of the exploratory laparotomy cannot be too vigorously condemned. One of the most important things in studying pain is to endeavour to see the patient when the pain is actually present; in certain circumstances in order to assist diagnosis, it may even be justifiable to take steps to reproduce the pain. It is remarkable how rare are the opportunities in the medical wards of a hospital and in consulting practice for seeing the patient during a bout of pain. Even in general practice the patient often prefers, or is compelled, to seek advice between attacks unless he be very gravely smitten. The more observations we are able to make about a pain the more likely are we to arrive at a correct solution.

There are at least eight reasonable questions which may be put in regard to a visceral pain. These have reference to: (1) situation, (2) extent of diffusion, (3) character, (4) severity, (5) duration, (6) frequency, (7) aggravating factors, (8) relieving factors. We must also inquire about associated pains (deep and superficial) and other associated symptoms. In addition to the usual routine overhaul an examination for the presence or absence of referred signs should always be made in doubtful cases, and this is particularly important in dealing with acute or chronic abdominal disorders. The difficulties with which we have to contend are manifold. They include the limited powers of observation and description possessed by many patients; the "spreading" or exaggeration of certain pains in nervous or debilitated subjects; the minimisation of pain by others; and last, but by no means least, the shortness of life in comparison with the length of our art. In general practice there are better opportunities for seeing patients repeatedly, of observing minutely variations in the behaviour of their symptoms, and of assessing individual physical and psychological reactions to these symptoms. Those of us whose work is of a consulting kind may, on the other hand, have better opportunities for special investigations, for study in the post-mortem room, and for discussion of problems with colleagues. For all of us the surgeon, the specialist, and the pathologist from time to time will furnish proofs which have long been waited for, and occasionally a patient with unusual powers of observation may greatly illuminate some particular point of doubt.

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* An alternative nomenclature for the painful seizures of intermittent claudication, employed to bring the condition into line with angina pectoris and angina abdominis.

### GROUP STUDY OF PAIN.

In conclusion, I should like to put to you the suggestion that there is no study more likely to furnish interests and rewards in practice than a concerted study of visceral or other pains. Results will come very slowly, but this need not deter you. No apparatus is required, no laboratory experience is necessary, and yet a valuable piece of clinical research can be pursued if four or more men in one town will set to work to keep and pool their notes of all cases of certain types of pain. Your interest may lead you to investigate headaches or backaches in preference to stomach-aches or heart-aches; or you may elect to investigate several varieties of ache simultaneously. You may discover nothing new in the course of years, and yet you will inevitably clear your own minds on many points which were formerly obscure, and help to establish facts hitherto imperfectly established. In this ancient haunt of learning you are particularly blessed, for you have so many eminent physiologists, pathologists, and anatomists with whom to discuss your difficulties. And finally, even though time or inclination for special inquiry be lacking, each one of us can bear in mind a saying of Hilton's which I am never tired of quoting: "Every pain has its distinct and pregnant signification, if we will but carefully search for it."

### REFERENCES.

1. Lennander, K. G.: Centralbl. f. Chir., 1901, xxviii., 209, and Jour. Amer. Med. Assoc., 1907, xlix., 836.
2. Mackenzie, J.: Symptoms and their Interpretation, 4th ed., London, 1920.
3. Ross, J.: Brain, 1888, x., 350.
4. Hurst, A. F.: Goulstonian Lect. on Sensibility of the Alimentary Canal, London, 1911.
5. Carlson, A. J.: Control of Hunger in Health and Disease, Chicago, 1916.
6. Waugh, G.: THE LANCET, 1925, ii., 1054.
7. Hilton, J.: Lectures on Rest and Pain, 2nd ed., London, 1877.
8. Head, H.: Brain, 1893, xvi., 4.
9. Head, H.: Loc. cit., 1893, xvi., 70.
10. Marcus, M.: Brit. Med. Jour., 1923, i., 185.
11. Head, H.: Loc. cit., 1893, xvi., 89.
12. Allbutt, Clifford: Diseases of the Arteries including Angina Pectoris, London, 1915.
13. Wenckebach, K. F.: Brit. Med. Jour., 1924, i., 809.
14. Danielopolu, D.: Loc. cit., 1924, ii., 553.
15. Heberden, W.: Commentaries on the History and Cure of Diseases, 4th ed., London, 1816.

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# SURGICAL TREATMENT OF CHRONIC DUODENAL AND GASTRIC ULCER:

## CHOLECYSTOGASTROSTOMY AS THE OPERATION OF CHOICE FOR INACCESSIBLE GASTRIC ULCER.*

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### *Diagnosis.*

A DYSPEPSIA may be due to many things, but a dyspepsia which has lasted for two years and has resisted medical treatment is a serious matter. Apart from such general conditions as phthisis, it is due to organic disease in stomach or duodenum, either ulcer or malignant disease or both.

"Periodicity" is the great feature of duodenal ulcer, and to a less extent of gastric. Constancy and steady progression in intensity is the great feature of malignant disease. The onset of these latter qualities in a case which already exhibits the former indicates malignant degeneration or implantation. Gastric diseases are diseases of the prime of life, and this is especially so of duodenal ulcer. Women and men are equally effected by duodenal and by gastric ulcer. Duodenal ulcer is more than three times as common as gastric.

Malignant disease is associated with a loss of appetite amounting to a positive aversion to food. Duodenal, and to a lesser extent gastric, ulcer seems to whet the appetite; a man with a duodenal ulcer has his best time, as have most healthy people, after his biggest meal. The characteristic cachexia, the constant eructations and frequent vomiting of malignant disease are only late manifestations.

A dyspepsia due to a so-called chronic appendicitis is characterised by a mixture of the symptoms of duodenal and gastric ulcer, and is often associated with vague pain in the lower abdomen with a tenderness in the region of the appendix, where pressure may give rise to a reflex pain in the epigastrium. I do not pretend ever to diagnose appendix dyspepsia except by a process of exclusion, and that usually at a high exploration where duodenal and gastric ulcer can first be searched for.

Briefly, a duodenal ulcer pain is a "pain" before food and relieved by food, whilst a gastric ulcer pain is a "pain" after food and made worse by food. In the former case the "pain" comes on three or four hours after food; in the latter in half an hour or more. Pain which wakes a patient at 1 or 2 o'clock in the morning is a duodenal pain, and the hour at which it begins depends on the time the last meal was taken.

Symptoms of duodenal ulcer can be, and usually are, obscured by the frequent taking of food or of alkalis; and in writing a history very careful attention must be given to this point; it is never so with gastric ulcer. Possibly this fact accounts for the many cases of duodenal ulcer not recognised until perforation or hæmorrhage occurs. The patient has successfully treated his or her own symptoms.

I think there is no doubt of the seasonal variation in the pain of duodenal ulcer. Spring and autumn are the worst times of the year, but a cold east wind at any time is almost certain to precipitate an attack. Mental anxiety, indoor occupation, and lack of exercise will accentuate an attack of either duodenal or gastric ulcer. A change of climate with a holiday from work acts like a charm in a duodenal case; in few diseases is the patient more inclined to consider himself cured. Irregular meals certainly predispose to, and accentuate, duodenal ulcer, and for this reason it is seen so commonly in members of our own profession.

I have spoken of "pain," but in duodenal ulcer it is not often pain as generally understood; it is rather a vague epigastric or substernal discomfort, with a frequent desire to swallow an apparent œsophageal obstruction; this desire is satisfied by the ingestion of air, and the subsequent eructation of it affords relief. These symptoms increase in intensity as the next meal approaches, and the discomfort may localise itself over the upper part of the duodenum—that is, high up in the right half of the epigastrium—and become an actual localised pain, causing the sufferer to hold his stomach and to bend his body. With these things are associated a feeling of weariness and an irritability of temper so marked that when the patient reaches his home in the evening his one inclination is for rest, both mental and bodily. Pain running superficially along the right costal margin signifies a localised peritonitis due to inflammation, but *not* subsequent to perforation. Vomiting is rare in the uncomplicated case, but if it occurs it is vomiting of an acid fluid which scorches the throat and is swallowed again. Sometimes such a quantity of this fluid is brought up at night that it runs through the nose and soaks the pillow. Hæmorrhage which is overt is a complication. Occult blood in the stools is a sign of ulcer and should be sought for, care being taken to exclude a carnivorous dietary; it is more commonly found in duodenal than in gastric cases.

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* Read before the York Medical Society, Jan. 16th, 1926.

The *physical signs* of duodenal ulcer, apart from pyloric obstruction and hæmatemesis which are complications, are very slight—a highly placed small stomach with a tender spot indicating the site of the ulcer

*Gastric ulcer* is a more difficult condition to diagnose; the time of onset of pain is much more indefinite, but is usually earlier after food; the "pain" is more of a real pain than that of duodenal ulcer. It is less periodic and less amenable to treatment by diet and by alkalis. The site of the pain is in the middle line or to the left and along the lesser curvature, but there is a frequent complaint of radiation to the interscapular area. Vomiting occurs more often in gastric ulcer and affords great relief Hæmatemesis is more common than in duodenal ulcer, but not so common as generally supposed In my view the "dyspeptic facies," the drawn, tired, grey face is commoner in duodenal than in gastric ulcer. In either condition the patient loses weight during an attack, and gains it in the intervals.

Mention should be made of the dyspepsia due to *gall stones* In my view it is never a painful condition except during an attack of colic. It is just a constant "flatulency" after food, with attacks of colic superimposed. In practice the story of the symptoms is sufficient, but one is never happy in suggesting operation without an X ray examination. This is a matter for X ray specialists, and I will only mention what I think are the salient points. A duodenal ulcer case should show a small, actively contracting stomach which empties rapidly; only rarely is the crater of an ulcer or a pouching of the duodenal line to be seen. Fixation of the pylorus without a crater might mean either gastric or duodenal ulcer A gastric ulcer cannot be diagnosed except by the presence of a crater or the deformity due to organic contraction; fixation of any part of the lesser curvature and accentuation of the incisura are valuable signs. A "filling defect" in the stomach is highly suggestive of malignant disease. The crater of either duodenal or gastric ulcer should be extremely sensitive to pressure It is obvious that a pyloric stenosis is a sign of mechanical obstruction and is associated with a big stomach. A pyloric spasm is difficult to recognise, but if recognised is a sign of hyperchlorhydria with or without ulcer

There are many surgeons who will not operate without a Rehfus test—i e, an estimation from hour to hour or less of the free acid in the stomach. The process of swallowing and keeping the necessary tube is much resented by most patients, and in my view, except as research on gastric secretion, is of small value.

I have thought for many years that the earlier symptoms of ulcer are due to inflammation—a congestion, a hyperacidity, and a spasm of the pylorus, with infection of, and breaking down of, Peyer's patches on both sides of the pylorus. I think the usual big gastric hæmorrhage is a weeping of blood from erosions" which are broken-down Peyer's patches. I still believe what I said in the Arris and Gale lecture in 1923—that the originating focus is in the last few inches of the small intestine, the appendix, or the cæcum, and that the spread is by lymph vessels reaching the pyloric area by aberrant channels set up by lymph blockade I think there is no doubt that this conception of the cause of ulcer very materially helps one to estimate the kind of symptoms to be expected and the kind of treatment, both medical and surgical, most likely to be of use I believe that in the absence of complications, and bearing in mind the possibility of malignant disease in case of a gastric ulcer, it is a reasonable thing to try the effect of rest, diet, and medicine for two years from the definite commencement.

It is no part of mine to speak of the details of gastro-enterostomy or gastrectomy, but rather to indicate some changes which are occurring in gastric and duodenal surgery. Before any surgical procedure is adopted it is assumed that every possible source of infection is explored and dealt with, particularly those in the mouth and nose; examination of the appendix, gall-bladder, cæcum, and the lower part of the ileum is understood to be a part of every operation.

### *Surgical Treatment of Duodenal Ulcer.*

Two chief factors enter into the question: (1) What shall be done with the ulcer? (2) Will a gastro-enterostomy or other drainage operation be necessary or advisable?

There is no doubt something should be done with the ulcer At the least it should be invaginated by sutures and covered by omental tissue, usually by uniting the gastro hepatic and the gastro-colic. Two things must be secured (*a*) the prevention of perforation; (*b*) the prevention of hæmorrhage. Suturing of the ulcer also serves to block the pylorus for a time and possibly gives rest to the ulcer, causing most of the gastric contents to pass through the anastomosis, and allowing the escape of acid juice between meals when the pylorus is closed.

The most usual method of dealing with the ulcer at Leeds is to burn out the centre completely and then suture in the ordinary way This is done to destroy the highly infective crater and also to ensure a permanent narrowing of the duodenum and therefore a partially functioning anastomosis. Other methods involve complete division of the pylorus; others ligation of the pylorus, and others (Pannett and Finsterer) complete excision of a large part of the duodenum and the pyloric end of the stomach. Finney's operation is practically a wide gastro-duodenostomy, but is described as a pyloric plastic operation.

Practically speaking, a short-circuit operation of some kind is done in every case; sometimes an ordinary gastro-enterostomy; sometimes, as strongly advocated by my colleague, Mr E. R. Flint, a gastro-duodenostomy. In my opinion a gastro-duodenostomy is to be preferred, assuming the duodenum to be sufficiently mobile or easily mobilised Gastro-enterostomy, except as a remedy for a mechanical obstruction, is becoming less popular It has many disadvantages, and its utility as a drainage operation for food in the presence of a patent pylorus is more than doubtful; in fact, the best results are those where, after a year or so, the stomach contents pass wholly, or nearly so, through the pylorus, and the new stoma does nothing except regurgitate bile, pancreatic juice, and duodenal secretion, and drains away superfluous gastric juice between meals.

One is apt to imagine the stomach as a bag hanging vertically and emptying at its lowest point. This is true of the cardia, but the contents of the mid-stomach and the pylorus are carried up along the *lesser* curvature and not at all along the *greater*, except the stomach be very full If the pylorus be open the contents will pass through it despite the new stoma. Where this movement of food fails to take place the contents may be jettisoned *at once* through the anastomosis into the small intestine, and a high intestinal intolerance with an immediate, painful, and foul diarrhœa ensues.

### *Acidity in Relation to Gastric Ulcer.*

Before considering the surgery of *gastric ulcer* it would be well to ask what is acidity?

First of all there are considerable doubts as to what constitutes *normal* acidity. Horsley[1] quotes Carlson as saying that there is to some extent a continuous secretion of gastric juice He says there is no such thing as hyperacidity, because *normal* gastric juice may contain as much as 0·5 per cent of hydrochloric acid, and the pathological variation is toward *hypo-acidity* According to his (Carlson's) observations, even "appetite" gastric juice is not essential to good digestion, and perfect health may be maintained with gastric juice of very low acidity On the other hand, examination of a very large number of cases, probably over 1000, at the Leeds Infirmary and elsewhere in Leeds, shows according to our biochemists that there is a definite and distinctive rise in the amount of free

HCl some two to three hours after food in 80 per cent. of cases found to have duodenal ulcer, though in gastric ulcer there is no characteristic wave at all.

Moynihan, at the Hunterian Society of London in January, 1923, said: "Only 20 per cent. of cases of gastric ulcer show a high normal curve of hyperchlorhydria, but 72·7 per cent. of duodenal ulcers show it." In many cases there is an apparent hypoacidity, and this when well-marked ulceration is found. It would appear, therefore, that hyperacidity, as we are able to recognise it chemically, is by no means always present, but symptomatically there is no doubt it is a most striking feature, and the relief of symptoms of both duodenal and gastric ulcers of the ingestion of alkalis is undoubted.

Donald Balfour [2] says: "While the relation between hyperacidity and ulcer is not invariable, since well-developed ulcers may exist (with a chlorhydria), the fact remains that persistent hyperacidity is one of the most prominent features of peptic ulcer."

I should like to say a few words at this point on the effect produced on the acidity of the gastric and duodenal contents by gastro-enterostomy. There is no doubt whatever—acidity is materially reduced and probably for two reasons: (1) chiefly because bile, pancreatic juice, and duodenal secretion regurgitate through the anastomosis into the stomach; (2) because the new stoma drains away the superfluous gastric juice.

C. H. Mayo [3] says: "In the surgical treatment of ulcer we have applied a well-known principle of agriculture; an acid and continuously wet soil is 'tile-drained' and its surface limed. . . . A gastro-enterostomy overcomes the effects of pyloric spasm preventing retention of gastric secretion after food has left the stomach, and by allowing sufficient quantities of the alkaline secretion of the duodenum to pass into the stomach to lower the general acids."

There is no doubt, then, in his mind that one of the great uses of gastro-enterostomy is a lowering of gastric or duodenal acidity. If it be true that the great reason for doing a gastro-enterostomy is the reduction of acidity by regurgitation of alkaline juices through the stoma, or by the drainage of superfluous gastric juice, then a gastro-duodenostomy would be a better operation and a more physiological one.

### *Surgical Treatment of Gastric Ulcer.*

Now the surgery of *gastric ulcer* has been complicated by one great factor—the possibility of a gastric ulcer or its scar becoming malignant. I say advisedly its "scar," because I believe in the natural healing of gastric ulcer. Controversy is at present raging round this very point, and I think, as in most things in surgery, both sides have gone too far, and the truth is in the middle. I strongly feel that a gastric ulcer should be excised whenever possible, and when impossible it should be cauterised after the method of Balfour, or be dealt with by suturing, but there are many gastric ulcers which are inaccessible to any local interference whatever.

I do not believe that gastro-enterostomy alone is of any real value for a gastric ulcer except possibly when the ulcer is very close to the pylorus, and even for that the best treatment is excision by partial gastrectomy. The operation usually performed until recent years was combination of excision or destruction of the ulcer with a gastro-enterostomy. The modern operation is partial gastrectomy.

Partial gastrectomy may be as easy as gastro-enterostomy, and when easy it has no higher mortality, but taking gastrectomy *in general*, I should say the mortality approaches 8 per cent. even in cases not carcinomatous. It is always a big operation—sometimes a big "adventure"—and is well borne by the patients. The results, in those which recover, are certainly better than by any other method of treatment. It is completed by suture of the cut end of the stomach to the jejunum, the duodenal stump being closed. The value of a big gastrectomy, in addition to removal of the ulcer, is the removal of a large area of acid-secreting musoca. "Sleeve resections," as advocated by Judd and Lyons [4] and by Walton,[5] aim only at a more satisfactory local excision, but do, in fact, get rid of a big area of acid-bearing mucosa.

What is required, if it can be got, is an operation which shall give rest to the ulcer and at the same time neutralise the acidity. No one operation, apart from gastrectomy, can do both. A gastro-enterostomy can reduce acidity, but cannot give peace to the ulcer.

The method of dealing with the *inaccessible ulcer* to-day is by jejunostomy—i.e., feeding the patient entirely by the jejunum to give complete rest to the stomach. This operation is satisfactory in that it does give the patient relief, but I have not known it cure; relapse takes place as soon as the tube is removed and mouth-feeding begins. I have a patient who has had a jejunostomy done three times, each time keeping his tube for two years; he was much relieved, but relapsed as soon as mouth-feeding was commenced. Rest has been achieved, but no reduction in acidity. To most people anything in the nature of feeding through an abdominal tube is most revolting.

### *Bile in the Normal Stomach.*

For a long time I have thought gastrectomy for a simple ulcer a very great mutilation, though I have recognised its efficiency. Some years ago I began to wonder whether bile, pancreatic juice, and duodenal secretion might be a beneficent factor in stomach digestion. One recognises the presence of bile in the normal stomach during ordinary digestion, and one knows of its presence there in large quantities under certain toxic conditions which give rise to vomiting. Might it be that bile, pancreatic juice, and duodenal secretion are utilised as a "protective" fluid, which is, as occasion may require, passed backwards through the pylorus into the stomach? It is also to be remembered that ulceration (except the very rare Curling's ulcer which occurs in bad cases of burns) is not seen in the duodenum at or below the bile papilla.

Glaessner has shown that giving patients sodium cholate reduces a pre-existing hyperchlorhydria. Palfrey found the same result following the administration of salol-coated pills of ox bile. Boldyreff showed by experiment that pancreatic juice and bile regurgitate into the stomach regularly after the ingestion of much fat and in the presence of large quantities of free acid. In his opinion this backward flow of alkaline juices is an attempt to neutralise an unusual gastric acidity. On the other hand, Lonnquist, Wiedemann, Rywosch, Oddi, Dastre, and Smith found by experiment that bile exerted only a small effect, if any, on the reduction of acidity.

All observers noted than an anastomosis of the *whole* of gall-bladder to the stomach, even when the *whole* of the bile (by ligature of the common bile-duct) was caused to pass through the stomach, had no deleterious effect of any kind (Cannac, Masse, Mocquot, Kehr, Jaboulay, and others). Post-mortem examinations of the animals showed no change whatever in the gastric mucosa.

In 1914 my colleague, Mr. H. Collinson, and I published in the *Journal of Surgery* an account of three cases where the duodeno-jejunal junction was completely divided, both ends closed, and a gastro-enterostomy performed. In all three there was complete tolerance by the stomach to bile and pancreatic juice, which under these conditions must pass backwards into the stomach and out through the gastro-enterostomy opening. One knows the complete tolerance of the stomach to the presence of bile in the many cases of cholecysto-gastrostomy seen and done for obstructive jaundice.

### *The Rôle of Bile in the Treatment of Gastric Ulcer.*

Dr. W. Wayne Babcock [6] was probably the first surgeon to apply the supposed virtues of *bile* to the treatment of gastric ulcer, and to suggest its use for persistent hyperacidity and pyloric spasm. He says: "Contrary to conventional opinion, bile is a normal fluid in the stomach and plays an important but poorly recognised part in gastric digestion. Its entrance into the stomach does not produce nausea or discomfort, but is associated with the cessation of gastric digestion and the arrest of motor activity of the stomach. Thus at the completion of each period of gastric digestion the pylorus normally relaxes, bile flows into the stomach, and neutralises and permanently arrests the activity of the acid pepsin in the chyme. The antrum of the stomach which has felt the brunt of the irritation of gastric digestion is coated with a protective film of the alkaline mucilaginous fluid, and the peristaltic movements of the stomach cease. We would term bile, therefore, the normal resting medium of the stomach. Were the action of the bile other than soothing its normal presence in the stomach would not so uniformly coincide with the resting period of the organ.

"Even in gastric disturbance with nausea and vomiting the pylorus relaxes and bile pours into the stomach until the entire organ is coated and bile is ejected from the mouth. From the nauseous taste of the vomit it is a common concept that the bile has disturbed the stomach, but it is much more logical to believe that the regurgitation of bile is a protective mechanism of nature, serving to neutralise the offending gastric contents and to soothe and quiet the irritated walls of the stomach. Blue litmus paper having been dipped in bile is more slowly and less intensely acted upon by acid chyme than the uncoated paper. In the duodenum and jejunum the protective influence of the bile and pancreatic juice is shown by many observations. Ulcers of upper intestine are exceedingly rare, except in the first portion of the duodenum, where there is the least opportunity for the neutralisation of the chyme by the bile and pancreatic juice. If by operation we reduce or eliminate the protective influence of the bile and pancreatic juice against the chyme in the duodenum and jejunum, ulceration becomes common.

"Exclusive of non-absorbable suture sinuses, gastrojejunostomy is followed by ulcer of the jejunum in about 2 per cent. of the cases. When the bile and pancreatic juice are diverted from a segment of the jejunum, as by the Roux gastro-enterostomy, the percentage of secondary ulcers greatly increases. In six out of seven dogs in which Exalto anastomosed the jejunum with the stomach after diverting the duodenal fluids in the colon, jejunal ulcers occurred. It is said that, unlike gastro-jejunostomy, gastroduodenostomy is not followed by jejunal ulcer. If the bile and pancreatic ducts are transplanted from the duodenum to the upper jejunum by operation, ulcers of the duodenum frequently follow. Therefore, whenever chyme from the stomach enters the upper intestinal tract without sufficient admixture with the bile and pancreatic juices, ulcers are prone to develop, and there can be little question that the latter fluids normally protect the duodenum and jejunum from ulceration. As to the exact elements that cause the ulceration, free hydrochloric acid, acid pepsin, toxins in solution, bacteria or other agents; and the precise protective elements in the duodenal fluids, alkalis, mucus, nucleo-albumin, or other substance, we will not brook unproductive dispute by attempting to name. As surgeons we think it unnecessary to enter the controversy as to whether or not peptic ulcers depend chiefly upon the hydrochloric acid content of the gastric juice."

With such complex fluids it is unnecessary to assume that a single element is entirely responsible for any particular activity. Bread is equally nourishing to the man who does not fully understand its composition, and bile may serve the surgeon not versed in its chemistry. It is important to know, however, that the so-called "peptic ulcers" have a geographical incidence corresponding to areas where the most active chyme has had the least admixture with the duodenal juices, and furthermore, that the operations that have best stood the test of experience in relieving these ulcers (gastro-enterostomy, Finney pylorectomy) are those that best permit the access of duodenal contents to the area of ulceration. The drainage function of the new opening is often negligible. Moreover, it is a striking fact that the efficiency of gastro-enterostomy for ulcer shows a close relationship with the ease of access of the duodenal juices to the ulcerated area produced by the operation. Thus ulcers that lie out of the path of the fluids passing from the new stoma along the wall of the stomach to the duodenum, such as ulcers of the lesser curvature, in a much larger proportion of cases fail to heal after the operation than ulcers about the pylorus. If it be true that it is chiefly the protective film of bile covering the mucosa that permits the average ulcer to heal, then we would suggest that the simple anastomosis of the gall-bladder into the area of ulceration or into the area left after excision of the ulcer (cholecysto-ulcerostomy) be substituted for the more formidable and difficult gastro-enterostomy.

The advantage of such an operation lies not merely in the greater accessibility of structures to be anastomosed, but in the fact that the bile is directly delivered to the part where it is most needed, while the dangers of a secondary jejunal ulcer or the other complications of a gastro-enterostomy are avoided. The continuous entrance of the bile into the stomach does not necessarily produce symptoms. Patients who have had cholecystogastrostomy performed seem to be unconscious of the increased quantity of bile in the stomach. While the bile entering the stomach after a cholecystogastrostomy reduces the total acidity, it does not abolish gastric digestion by completely neutralising the chyme. Although acid chyme is completely neutralised in the duodenum, *Dunn's* experiments show that the entrance of all the bile and pancreatic juice into the stomach will not completely alkalinise the gastric contents. Of course, the surgeon aims to protect only the irritated areas of mucosa, not to completely alter the chemistry of gastric digestion. Fortunately the normal tendency for the gastric contents to remain in well-defined strata and for fluids entering from new openings to diffuse along mucous surfaces is of aid to the surgeon.

### *Cholecystogastrostomy.*

I knew nothing of any previous work or of any writing on the possibility of the use of bile in the treatment of gastric ulcer until some two weeks ago, when, whilst gathering material for this paper, I came across a paper by F. G. Du Bose, *of Alabama*,[7] entitled "Cholecystogastrostomy and Cholecystoduodenostomy," wherein he suggests the operation as a treatment for perforated gastric or duodenal ulcer and for persistent pylorospasm due to hyperacidity, but makes no mention of having *done it*. He says, however, "Probably experience will prove that cholecystogastrostomy is as useful in gastric ulcer as gastro-enterostomy." Following on this I discovered Babcock's still earlier work and a very illuminating paper, An Experimental Study of the Effect of Cholecystogastrostomy on Gastric Acidity, by Dr. Ernest Grey, of Boston, U.S.A. In ignorance of what had already been done and written in America, in December of 1924, whilst watching my friend, Mr. G. Gordon-Taylor, do a difficult gastrectomy at the Middlesex Hospital, I said I thought the removal of such an amount of stomach for a tiny ulcer was a great mutilation, and one must find something as good, or better, and very much easier. I said I *intended to* stitch the gall-bladder into the stomach and allow bile to flow into it, and do no more.

I have never lost sight of the fact that cholecystogastrostomy brings only bile into the stomach; it obviously does not bring in pancreatic or normal duodenal fluid, but I think the undoubted beneficent effect of bile alone is proved, and it may be more than a simple reduction in acidity; bile may have other powerful qualities in the reduction of gastric disturbances.

In March, 1925, I did my first cholecystogastrostomy for *inaccessible* gastric ulcer. As so often happens with a new idea, this case was a failure; the patient succumbed on the tenth day, but from a suppurative parotitis with thrombosis of the internal jugular vein; the site of operation was found to be quite perfect and there had been no sickness. Since this time I have done, in all, 18 cases: 16 for gastric ulcer where excision or destruction of the ulcer was impossible or would have been very dangerous, 1 for a recurrent, intractable duodenal ulcer, and 1 for a hyperchlorhydria and pyloric spasm with typical duodenal symptoms. In the two latter cases a cholecystoduodenostomy was performed just beyond the pylorus.

It will be clear that this operation attempts no more than a reduction of gastric acidity. So far as I know, something in addition (possibly a jejunostomy) may be necessary to obtain rest for the stomach, but that is a matter for future consideration.

### *Results.*

You will be interested to hear what the results have been so far: four cases are in hospital now; the others have certainly been most encouraging, though it would be ridiculous to claim anything better than the immediate results of other measures. No single case has suffered in any way from the flow of bile into the stomach. In fact, there is nothing whatever to show that anything unusual has been done.

If it is eventually proved that cholecystogastrostomy gives a better result for inaccessible gastric ulcer than gastro-enterostomy (and I am very sanguine of this); if it is as good as jejunostomy (which I think likely), then I am sure, bearing in mind the drawbacks of both these operations, it may become the operation of choice. I look forward even further, and am sufficiently convinced of the correct physiological character of the operation to hope that it may become the operation of choice for every gastric ulcer and also in the modified form of cholecystoduodenostomy for all duodenal ulcers, where there is no mechanical condition requiring a short circuit.

It would be well to add that those of us who do these things do not imagine that the mechanical processes we carry out end the treatment. We only put the patient on the road to recovery. Every patient is given a dietary, and medicinal measures, aiming at a reduction both of gastroduodenal acidity and of intestinal toxæmia, are recommended.

Something should be said of the results of operation for duodenal ulcer dealt with by treatment of the ulcer and a gastro-enterostomy. About 85 per cent. are cured—i.e., are quite free from symptoms; 10 per cent. suffer from a gastro-enterostomy and modified recurrence of symptoms, and 2–5 per cent. suffer severely from a new ulcer in the gastro-enterostomy stoma.

Gastric ulcer is not so satisfactory. Donald Balfour, writing on the results of treatment of gastric ulcer chiefly by local excision and destruction, plus a gastro-enterostomy,[8] says 826 cases were dealt with; of 85 per cent. traced, 70 per cent. have complete relief, 10 per cent. are improved, and 4 per cent. have no relief.

Since writing this paper, my attention has been drawn to the following extract from a paper read at the opening of the session of the Harveian Society on Oct. 23rd, 1919, by Sir Berkeley Moynihan[9]:—

> "There is a general agreement among those who have written upon the subject of the treatment of gastric ulcers that an important part of every method consists in counteracting the normal or the increased acidity of the gastric juice. If this effect is necessary, then the physiological effect of gastro-enterostomy must play some part in causing the good results that do certainly follow at times upon its performance. Whether the partial or complete neutralisation of the acidity is necessary to healing is, however, by no means as certain as is supposed; for in cases both of gastric and duodenal ulcer hypoacidity is sometimes found. According to Friedenwald a reduction of the acidity occurs in about one-fifth of the total number in cases of gastric ulcer, and in my experience in rather more than this proportion of cases of duodenal ulcer. I have little faith in the 'physiological' action of gastro-enterostomy. If the access of bile to the stomach with its alkalinising properties were proved to be of any value, it would surely be better to anastomose the gall-bladder to the stomach, as I have many times done in cases of carcinoma of the pancreas causing obstruction to the common duct."

*(References are given at foot of next column.)*

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# ISCHÆMIC NECROSIS OF THE HEART

## IN A PATIENT TWENTY-SEVEN YEARS OLD.

*Clinical Findings by*
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*Pathological Findings by*
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The appearance of numerous papers recently by various authors, notably McNee,[1] Gibson,[2] Coombs and Hadfield,[3] has stimulated interest in the correlation of a fairly typical clinical syndrome with a definite pathological process. The following case is reported owing to the extreme rarity of an ischæmic necrosis of the heart, resulting from atheroma in a patient of 27; indeed, we have been unable to trace a similar one in the literature which deals almost monotonously with the cardiac end-results of senility.

### *Clinical Findings.*

J. B., a man aged 27, had had measles in childhood, but no other exanthem. In 1915 he joined the army and was passed for active service; he was in the East for three years—Egypt, Mesopotamia, and India—and during this period contracted sandfly fever and malaria; the malarial attacks recurred until 1923. In 1917 he contracted syphilis in Mesopotamia and was treated by intravenous injections. In 1919, during a month's leave pending discharge from the army, he first developed nephritic symptoms—headache, backache, dyspnœa, and œdema of the face and legs; he consulted a private doctor who diagnosed nephritis, and referred him to the military authorities. The diagnosis was confirmed after a period of observation in a military hospital, and he was invalided out of the army with a pension for this disability.

The exacerbations recurred, and he was treated in various hospitals: the only notes available are those taken during his detention in the General Hospital from March 20th to May 10th, 1920, and from May 21st until June 11th of the same year. He was admitted with acute headache, vomiting, and diarrhœa, generalised "renal" œdema, the urine was diminished in amount and contained blood, albumin, granular and epithelial casts, with a moderately raised blood pressure. Under the usual treatment the symptoms disappeared and the patient was discharged with only a haze of albumin. These attacks continued to recur, and about Christmas, 1924, anginal symptoms first arose—an acute pain in the præcordial region, shoulder, and down the outer side of the left upper arm, coming on after exertion; the symptoms of renal insufficiency abated somewhat. Latterly the

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[1] Quart. Jour. Med., October, 1925.
[2] The Lancet, 1925, ii., 1270.
[3] The Lancet, 1926, i., 14.

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### *Chronic Duodenal and Gastric Ulcer: References.*

*(Continued from previous column.)*

1. Horsley, J. Shelton: The Choice of Operations for Gastric and Duodenal Ulcer, with especial reference to Pyloroplasty, Jour. Amer. Med. Assoc., 1923, lxxxi., 912.
2. Balfour, D. C.: The Case against Gastro-enterostomy, Collected Papers of the Mayo Clinic, 1924.
3. Mayo, C. H.: Gastric and Duodenal Ulcers, Ibid., 1920.
4. Judd, E. Starr, and Lyons, John H.: Resection of the Body of the Stomach for Ulcer, Ibid., 1922.
5. Walton, A. J.: A Text-book of the Surgical Dyspepsias.
6. Babcock, W. Wayne: Cholecystogastrostomy and Cholecystoduodenostomy, Amer. Jour. Obstet. and Gynec., May, 1921.
7. Du Bose, F. G.: Cholecystogastrostomy and Cholecystoduodenostomy, Surg., Gynec., and Obstet., September, 1924, p. 295.
8. Balfour, D. C.: The Case against Gastro-enterostomy, Collected Papers of the Mayo Clinic, 1924.
9. Moynihan, Sir Berkeley, Bt.: The Diagnosis and Treatment of Chronic Gastric Ulcer, Brit. Med. Jour., Dec. 13th, 1919.

anginal attacks have become much more frequent, and their occurrence when climbing the stairs of tramcars during the course of his work as a tram conductor made the patient extremely apprehensive.

On July 20th, 1925, the patient felt very tired, but he went to his work at 4 P.M.; on reaching up to collect his tickets from a shelf he was seized with an agonising pain in the præcordia radiating down the outer side of the left arm. His condition was so grave that he was taken without delay to hospital.

*Condition on Admission.*—He was seen at about 5 P.M. and presented the typical picture of severe angina pectoris, no organic disease was discoverable on physical examination, and the pain was quite unrelieved by the inhalation of amyl nitrite. He was admitted to the hospital, therefore, as angina pectoris, probably due to coronary apoplexy. Soon after admission morphine, gr. ¼, was given to relieve the pain; the patient's general condition grew rapidly worse, the pain was obviously unbearably severe, and he developed the signs of severe shock and left heart failure—pallor, failing pulse (temp. 96·6° F.; pulse 92; resp. 32), and subnormal temperature. He lost consciousness and died at 9.35 P.M., about five and a half hours after the onset of symptoms.

### *Pathological Findings.*

The body was that of a well-nourished and well-developed young man. The heart weighed 400 g., and was slightly enlarged. The muscle was soft and flabby, but showed no evidence of infarction or fibrosis. The bases of the aortic valve cusps were thickened by atheromatous plaques, which projected inside the semilunar folds as glistening nodular yellow excrescences. The other valves were normal.

The first part of the aorta showed very numerous fatty streaks under the intima, which was distinctly raised over them. In the left coronary artery this change was still more evident, and at a distance of half an inch from its origin the intima covering a mass of fatty material had ruptured and produced an "atheromatous" ulcer, upon which an ante-mortem thrombus had formed and completely occluded the lumen of the vessel. Beyond this point a few atheromatous patches were present, but the finer branches of the artery remained patent. The right coronary artery was normal. In the aorta there were many atheromatous areas over which the intima showed little thickening, and there was no macroscopic evidence of calcification. The intima was slightly wrinkled longitudinally, but did not present the appearance of syphilitic disease. In both iliac arteries and in the left femoral artery there were small atheromatous ulcers covered by firm thrombi. In the arteries of the circle of Willis atheromatous changes were prominent, but not of sufficient degree to cause arterial occlusion.

The kidneys weighed 400 g. each, and were considerably enlarged; the capsules stripped easily and on the smooth surface exposed there were a number of bright yellow flecks of fat, sharply defined from their dark congested background. The glomeruli were unusually prominent. The spleen (200 g.) showed some enlargement, and the capsule showed a patchy thickening with dense and rather hyaline tissue; the Malpighian bodies were prominent, and the splenic artery and its branches showed atheroma. The brain, lungs, and liver appeared normal.

Microscopically the most striking changes were seen in the aorta, the left coronary artery, and in the kidneys. The atheromatous patches in the aorta were composed of fatty débris lying in an intima, which was definitely increased by fibrous tissue formation; the fat stained well with Sudan 3. Seen with the polarising microscope, much of the fat was doubly refractile, and cholesterin crystals were identifiable. In the left coronary artery the same changes were visible, but, in addition, some of the muscle-fibres of the media contained fat which was not of the doubly refractile type. In the kidney the epithelium of many of the convoluted tubules contained fat droplets, mostly doubly refractile, otherwise the kidney changes were those of subacute nephritis. No definite evidence of syphilitic lesions could be detected.

### *Comment.*

In the pathological findings perhaps the most striking features are: 1. The large amount of fatty material present in the subendothelial coat of the aorta and left coronary artery, with comparatively little fibrous thickening of this coat, and with almost no calcification. The absence of compensatory strengthening of the vessel must have expedited an early rupture of the intima. 2. The presence of fat in the muscular tissue of the coronary artery. 3. The doubly refractile fat present in the convoluted tubules. 4. The comparative youth of the subject of these changes.

There was thus a definite nephritis associated with a profound metabolic upset, as a result of which a very widespread deposition of cholesterin and of a special type of fat took place in certain of the larger vessels, and the question arises as to whether some grotesque exaggeration of the early stages of "arterio-sclerosis" (fibrosis of the media) has not given us, by producing premature death, an insight into the pathology of the disease in what might be called the pre-fibrotic phase. The absence of obvious infarction is explained by the short duration of the coronary thrombosis.

### *Summary.*

Death, after a typical subacute or chronic nephritis with frequent acute exacerbations, was clinically due to coronary occlusion, and was diagnosed as such. At the autopsy the picture was that of subacute nephritis with a generalised arterial degeneration of a fatty type, with a terminal thrombosis of the left coronary artery at the site of an atheromatous ulcer.

We are indebted for permission to publish this case to Dr. W. H. Wynn, in whose wards in the General Hospital the patient died.

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# SOME OBSERVATIONS ON THE TREATMENT OF CHRONIC DYSENTERY.

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THE cases of chronic dysentery on which the following observations were made include both bacillary and amœbic dysenteries and mucous colitis in which no pathogenic organisms were isolated, as well as those cases infested with flagellates such as *Lamblia*, *Tetramitus*, and *Trichomonas*, and the *Spirochæta eurygyrata*. The cases were all pensioners treated in the clinics and hospitals of the Ministry of Pensions and the chronicity of the dysenteries varied remarkably. Whereas many hundreds have been to all intents and purposes cured, a small percentage of cases will require periodical treatment, while there are a few cases which resist every known treatment.

For convenience the cases will be divided into three classes: (1) chronic bacillary dysentery; (2) chronic amœbic dysentery; (3) mucous colitis and infestations.

### *Chronic Bacillary Dysentery.*

The causative agent, *B. dysenteriæ* of whatever variety, has, in the large majority of these cases, long disappeared from the stools. Many hundreds of cultures made from the fresh stools in these cases have proved repeatedly negative to these bacilli. It is true that *B. flexner* has been found on one or two rare occasions, but not *B. shiga*, yet I think there is little doubt that *B. flexner* does lie up embedded in the intestinal wall in the sites of the old ulcers, and from this entrenched position continue the colitis and give rise to the repeated exacerbations of the disease. These are the cases in which the sole manifestations are alternate constipation and diarrhœa with mucus and occasionally blood. It is usually necessary in these cases to continue the treatment over many months with a carefully restricted diet, when no recurrence of the clinical symptoms will take place and a cure will eventually be obtained, but the difficulty is to get many of these patients to stick to a restricted diet for any length of time. Many drugs and combinations of drugs have been tried, among them bismuth, simarubæ et puniceæ granati decoctum, intestinal antiseptics such as salol, kerol, and dimol—all with little or no temporary benefit. For some time past I have relied on either stovarsol or the mixture of tr. ferri perchlor. ℳ xx. with liq. hydrarg. perchlor. ½ drachm in ½ oz. of water, to be further diluted when taken three times daily after meals. This, when continued for months with a restricted diet and given with a nightly dose of liquid paraffin to counteract any tendency to constipation, has proved most efficacious in my hands. In those cases where there is no constipation and the stools are invariably loose I have found stovarsol of great value. It is put up in 4 gr. tablets, and I find that it can be given to out-patients one tablet twice daily for a fortnight, followed by one tablet nightly for the following fortnight without the slightest fear of any ill-effects. Its tonic effects are of distinct value in the treatment of all forms of chronic dysentery, while in the majority of cases it lessens considerably the number of daily motions. It is essential, whatever form of treatment is being carried out, that the patient be given a supply of liquid paraffin to take in the event of a tendency to constipation arising, as is so often the case; 2 drachms to half an ounce of this is recommended to be taken daily after the last meal. I have had little or no success with parathyroid and calcium lactate in the few selected cases in which I have tried them.

### *Chronic Amœbic Dysentery.*

The first thing that strikes one in these chronic amœbic cases is the unusually healthy appearance of the majority of the afflicted. A patient may be passing stools consisting of almost pure mucus and blood and yet have an appearance of well-being. It is no uncommon occurrence for a man to say that he is feeling quite well, when his stool shows active vegetative forms with much mucus and blood. These intractable cases seldom seem to pass on to amœbic liver abscess, doubtless owing to the fact that there is always a free evacuation of the active amœbæ going on. Constipation, more or less chronic, is invariably the precursor of amœbic liver abscess.

An important point in the treatment of these chronic amœbic dysenteries is to avoid pushing the use of ipecacuanha or its derivatives to excess, so as to prevent the amœbæ becoming emetine-fast. This can be done by giving the courses of treatment, notwithstanding the presence of entamœbæ in the stools, at intervals, combined with the general treatment with tonics between the courses. It frequently happens that although the entamœbæ tend to disappear from the stools the latter remain loose and frequent. In some cases the ipecacuanha even aggravates the diarrhœa for a time. The above method of administration prevents the accumulation of the drug and any after-effects which its toxicity might give rise to. Between the courses either stovarsol, yatren, or kurchi may be given for a month, then another course of ipecacuanha if the stools contain cysts, or a month's treatment with cod-liver oil and malt if the stools are free of the cysts. Yatren should be given, three pills thrice daily, for the first fortnight, then two pills thrice daily for one week, followed by one pill thrice daily for the fourth week. It is sold in 4 gr. pills and in powder. This drug has been well reported on by, among others, Muehlens,[1] Menk,[2] Kuenen,[3] and Manson-Bahr,[4] and seems to be more particularly useful in those cases where the sigmoidoscope shows definite ulceration and changes in the rectum, when a 2–4 per cent. solution can be injected and retained in situ for several hours. Under this treatment, combined with the yatren pills per os, good results have been recorded in these particular cases, but when, however, the seat of the trouble is higher up in the *cæcum* and colon, no drug can at present replace ipecacuanha and its derivatives. Kurchi seems in some cases to be a useful adjuvant, while in others massive doses of bismuth, as recommended by James and Deeks,[5] have been found to have a decided curative effect. In all cases the diet should be kept as low as possible when drugs are given per os so that there is a better chance for them to come into contact with the amœbæ. The treatment outlined above can be carried out in out-patient clinics while the more resistant cases should all be sent to hospital, where the combined emetine and bismuth treatment can be given under supervision. For some time past I have been giving bismuth. subnitras in 30 gr. doses thrice daily combined with 10 gr. of sodæ bicarb., later doubling the bismuth and keeping the treatment on for three or four months with pulv. ipecac. radix in 10–20 gr. doses in cachet at bedtime for the first month or two only.

### *Mucous Colitis with Infestations.*

Among infestations the commonest are the flagellates *Lamblia*, *Trichomonas*, and *Tetramitus*, and *Spirochæta eurygyrata*. Of these, *Lambliæ* are most frequently seen, and various forms of treatment have been from time to time advocated for their eradication. Personally, I am inclined to think that they are of little or no consequence, as, per se, they do not cause dysentery, and but little inconvenience. When, however, they are found in combination with mucous colitis following true dysentery they are apt to aggravate the condition. It is known that numerous individuals harbour *Lamblia*, and have never had either dysentery or even severe diarrhœa. After examining many patients infested with *Lamblia*, whose stools periodically show the presence of mucus and blood, I have invariably found that they have at some period of their lives suffered from either bacillary or amœbic dysentery or both.

I could quote cases of men in whom repeated stool examinations over a period of many months or even years have been negative to *B. shiga*, *B. flexner*, and *Entamœba histolytica*, and who eventually have yielded up the elusive *E. histolytica* cysts, and one at least whose fæces gave *B. flexner* after a series of negative cultures. This has led me to try in these cases the methods I have outlined above for the treatment of both bacillary and amœbic dysenteries, and after persevering with them, although *Lamblia* cysts have persisted in the stools, the dysenteric condition has been got under control and finally all signs of clinical dysentery have disappeared. Some of the patients have had regular and formed motions now for months and years and still harbour *Lamblia*.

What I have said of *Lamblia* may be said with greater assurance of *Trichomonas*, *Tetramitus*, and *Spirochæta eurygyrata*. These infestations will gradually disappear as soon as the true cause of the dysentery has been discovered and successfully treated.

As regards the drugs more recently introduced I think that yatren promises to be a most useful adjuvant to our therapeutic armament in the treatment of amœbic dysentery, and it seems to me that it should prove of distinct value as an irrigation following appendicostomy or cæcostomy in those chronic cases unaffected by ipecacuanha and its derivatives. Emetren has been tried without success in a resistant case of chronic amœbic dysentery.

My thanks are due to the Director-General Medical Services, Ministry of Pensions, for kindly permitting the publication of these notes.

*References.*—1. Muehlens, P.: Munch. Med. Woch., 1921, lxviii., 802–803. 2. Menk, W.: Ibid., 1922, lxix., 1280–1282. 3. Kuenen, W. A.: Nederl. Tijdschr. v. Geneesk., 1922, lxvi., 1711–1713. 4. Manson-Bahr, P. H.: THE LANCET, 1925, ii., 544–546. 5. James and Deeks: Inter. Conf. on Health Problems in Trop. America (United Fruit Co.), 1924, pp. 271–308.

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# A CASE ILLUSTRATING THE VALUE OF THE SPHYGMOMANOMETER IN CARDIAC DIAGNOSIS.

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A CASE such as is here recorded shows the very important assistance in diagnosis and treatment which may be given by a careful use of the sphygmomanometer.

The patient was a woman, aged about 50, suffering from broncho-pneumonia. Her face was dusky from cyanosis, her head only slightly raised on pillows, and no true orthopnœa, and she was not extremely breathless. By means of the sphygmomanometer the following facts were ascertained: The systolic pressure as judged by the finger was 138. The range of oscillation of the brachial pulse was good; there was 8 mm. of movement of the Tycos needle at 140, 4 mm. of movement observable between the pressures of 100 and 130 mm. Hg, and at 110 there was an oscillation of 5 mm.

Had there been the myocardial failure of the left ventricle which her condition seemed to suggest, there would have been a low systolic pressure and an oscillation of 3 mm. or less. The above observation, therefore, showed that the muscular vigour of the left ventricle was good, and also that there was good tonic contraction of the peripheral vessels, in spite of the fact that clinically the patient appeared to be threatened with death from heart failure.

On using the stethoscope the following facts were elicited: The systolic sound was not lost till a pressure of 148 mm. Hg was reached—namely, 10 mm. higher than the systolic pressure as judged by the finger, and the loud sound ceased at 110. This practically coincided with the results obtained by the finger The lowest limit of audibility of the sound was very low—namely, 60 mm. Hg—and a loud sound became audible at 58. The important point about the character of the sound was that between 66 and 138 mm. Hg it was very loud and almost "rapping" or "slapping" in character, and between the pressures of 86 and 110 it was extremely loud and rapping and resembled the sound which is characteristic of Graves's disease.

This type of sound and the low diastolic pressure both suggested that the arteries were badly filled, and therefore if one could have taken a tracing of the artery between those pressures of 100 and 130 we should have found that although the range of oscillation appeared to be good the pulsation of the artery would have been a very collapsing one, resembling the aortic pulse in type.

This study of the blood pressure clearly demonstrated that we were dealing with a left ventricle of good muscular vigour which was being badly filled with blood—a condition very liable to result in fatal syncope, and whose cause must be either a muscularly weak right ventricle or interference with the passage of blood through the lungs. The venous beat in the neck could be felt to be of good strength, the sounds at the tricuspid and pulmonary areas were of good tone though not distinctly accentuated. The liver was enlarged and pulsating slightly. All these facts pointed to a right ventricle of good muscular tone and therefore the cause of the patient's danger must lie in the pulmonary circulation. A relative emptiness of the left ventricle was suggested by the extreme feebleness of its sounds (in spite of the character of the arterial pulsation), by the absence of any palpable impulse, and also the absence of any cardiac dullness except quite close to the sternum.

On inquiry as to symptoms suggestive of asthmatic attacks it was ascertained that they were present, and the general presence of wheeze as well as of moist sounds (suggestive of broncho-pneumonia) confirmed this diagnosis. The case, therefore, clearly called for treatment as a case of asthma and not for cardiac stimulation, which would in all probability only have aggravated the symptoms. Such cases, as a rule, improve rapidly by treatment with stramonium both in the form of smoke from asthma powder and by ♏ 15 or more of the tincture internally every four hours. Sometimes the improvement is quite dramatic in its suddenness.

In the case in question the condition of the lungs was due to pneumonic infiltration complicated by chronic nephritis as well as to bronchial spasm, and the effect of the treatment was therefore much less rapid and effective. Nevertheless, two days later (although the general condition of the patient was showing little if any improvement) the condition of the circulation had changed.

The range of oscillation was now about normal—namely, 2 mm. at 80 and 90 mm. Hg, and 3 at 100, 2½ at 110, and ½ at 120 The systolic pressure as measured by the finger was 120 and by auscultation 120, instead of 138 and 116 respectively two days previously. The diastolic pressure was 60, and the commencement of a loud sound 66 as against 60 and 58 previously, and the rapping sound was much less loud and only heard between the pressures of 70 and 118 mm. Hg. Whereas two days previously the audibility of this sound commenced at 66 and was continued up to 138 mm. Hg In spite of these figures, which point to weakness of the heart's action, and also in spite of a pulse smaller and weaker than two days previously, the action of the left ventricle was on this date apparently more vigorous. There was a distinct and well-defined apex pulsation about the nipple line and the cardiac sounds audible over the left ventricle were much louder and showed more tone than two days previously. The venous impulses in the neck and the sounds audible over the right ventricle were much the same.

It was, therefore, justifiable to conclude that the treatment had sufficed to lessen the interference with the pulmonary circulation and that the left ventricle was being much better filled than two days ago, but that the patient was now being threatened with death from exhaustion owing to the severity of the broncho-pneumonia, and the nephritis from which she was suffering.

# Clinical and Laboratory Notes.

## THE
## LETHAL EFFECT OF ULTRA-VIOLET LIGHT
### ON NORMAL AND MALIGNANT TISSUES GROWN IN VITRO.

BY WARNFORD MOPPETT, M.B., CH.M. SYDNEY.

*(From the Department of Experimental Pathology, Lister Institute.)*

THE experiment here described was made as the extension of an observation by Dr. T. Lumsden,[1] that, when cultivated in vitro, normal cells were more susceptible than cancerous cells to temperature, bacterial infection, radium, and ultra-violet rays. An attempt was made to investigate further the effect of ultra-violet light upon normal and upon malignant tissues.

The specimens were exposed at a distance of 30 cm. from a quartz mercury-vapour lamp through a glass cover-slip 0·125 mm. thick. A quartz cover-slip was not used because glass of this thickness transmits sufficient radiant energy of wave-length down to 2300 A.U. from a mercury lamp for this purpose. A rough estimate of penetration was made by taking photographs of the mercury arc with a quartz spectograph with and without the intervention of the cover-slip. The times of exposures producing approximately equal but small density on the plate in two regions of the spectrum, 3000 to 4000 A.U. and 2300 to 3000 A.U., were compared. A definite absorption edge was observed at about 3000 A.U. Above this value eight seconds' exposure through the cover-slip produced the same density as an unscreened photograph having two seconds' exposure. Thus about 25 per cent. of the near ultra-violet and about 8 per cent. of that region between 2300 and 3000 A.U. penetrated to the growing cells. It is possible, however, that the shorter wave-lengths played a considerable part in the effect observed, for they have been shown to be those chiefly effective in destroying bacteria and protozoa, as described by Janet Clark[2] in an article on the Physiological Action of Light. Moreover, a high proportion of these rays would be absorbed by the cells, although only about 3 per cent of the total energy reached them.

The tissues were grown in ordinary serum of correct pH value as described by Dr. Lumsden,[3] a medium which maintains growth up to a month provided it be changed every few days, ample time for completing an experiment of this nature. The malignant tissues used were the mouse cancer M. 63 of the Imperial Cancer Research Fund and the Jensen rat sarcoma, both of which grow well under the above conditions. The normal tissues consisted of the kidney, heart, and spleen taken from rats and mice a few days old. The best period for experiment is the second or third day of cultivation, as growth is then well established, the cells are young and healthy, and there is a reasonable certainty that apart from any experimental interference they would continue to grow in a normal and healthy manner for the next 24 hours. Cessation of movement and ultimate disintegration of all the cells that had grown out from the fragment and adhered to the cover-slip at the time of exposure was the criterion of a positive effect. Mitosis is unusual and irregular in appearance in malignant tissues grown by this method, so that its cessation is not a suitable standard of injury. When cells have received a lethal dose characteristic changes such as shrinkage and irregularity of outline soon become manifest; it is best, however, to record the results 24 hours after exposure since the changes produced are then fully developed.

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[1] THE LANCET, 1925, i., 383.
[2] Physiological Review, 1922, vol. ii., p. 277.
[3] THE LANCET, 1924, ii., 65.

Two similar pieces of tissue were grown on one cover-slip, one of which was shielded with lead foil. The normal unexposed cells served as a control. After exposure the cultures were not fed till observations were completed. This does not interfere with normal growth, which will continue for several days, and the possibility of re-feeding having affected the growth is eliminated. The slides were kept cover-slip upwards after exposure, since healthy cells which have been shielded by the substance of the fragment frequently grow out among the dead cells, but in the above position of the slide such new cells tend to fall to the bottom of the drop.

Under the conditions of the experiment the carpet of epithelial cells growing from a fragment of kidney was found to be the most susceptible. An exposure of 10 seconds was always a lethal dose. Fibroblasts growing from a fragment of heart muscle required about 20 minutes and the wandering cells from spleen up to 30 minutes. In the case of the Jensen rat sarcoma at least 40 minutes' exposure was necessary to kill every cell adherent to the cover-slip, while mouse cancer was still more resistant, as it required 60 to 80 minutes' exposure to obtain a similar effect. The lethal dose for particular cells was found to be about the same in different experiments, and as an insufficient exposure caused no obvious change it was possible to confirm the observation in the following manner. Normal and malignant tissues were propagated on the same cover-slip and the exposure was graduated to kill the normal tissues present and leave the malignant tissues apparently undamaged.

### *Conclusions.*

It appears that various normal and malignant tissues have different powers of resistance; the kidney is the most sensitive, the heart next, and the spleen cells, which we may regard as comparatively undifferentiated, require a lethal dose approaching that for sarcoma. The malignant tissues, however, are definitely more resistant to ultra-violet light than normal tissues when grown in vitro in this way.

I wish to express my thanks to Prof. C. J. Martin for allowing me to work at the Lister Institute and to Dr. Lumsden, who has instructed me in his method of tissue culture.

## OSTEOMYELITIS

### OF FIFTY-SIX YEARS' DURATION.

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The latency of bone infections and their tendency to light up as the result of trauma or strain is particularly well illustrated by the following case.

A. W. was admitted to St. Mary's Hospital in 1870, aged 12 years, complaining of a painful red swelling above his left knee. He had been kicked a week previously, he said, by an irate gipsy. Osteomyelitis of the femur was diagnosed and confirmed at the operation when the bone was laid open. He was discharged cured. Subsequently he became a police officer. After 20 years' service, when aged 45, he received a heavy blow on the right arm during a struggle with a drunken man. Following this he was treated for osteomyelitis of the right humerus, from which a discharging sinus remained for the rest of his life.

At the age of 68, no longer a policeman, but still in official employment, he sustained a slight accident in mounting a horse van. The same evening his left thigh became painful, red and swollen, and he felt ill. He was admitted to hospital on the following day. His evening temperature was 103° F.; he was sweating and had nocturnal delirium. A very tender, red swelling just above the left knee (the original site of injury) at the back and outer side of the thigh was evident. The amount of fluid in the knee-joint was increased. The knee-joint was aspirated and turbid fluid was withdrawn. The left femur was exposed and the medullary cavity opened. A large abscess cavity filled with pus and débris was found. The cavity extended into both condyles and for a distance of 2 inches up the shaft of the bone. Staphylococci were grown from the pus.

For a time he improved and his temperature fell to normal, but on the fifth day he died from toxæmia and heart failure. At the autopsy there was evidence of bacterial infarction in the spleen and kidneys and marked arterial degeneration.

It may either be supposed that the infection lay dormant in the left femur for 56 years or that the previously damaged tissues formed a nidus to a subsequent infection. My thanks are due to Mr. Duncan Fitzwilliams for permission to publish this case.

# Medical Societies.

## MEDICO-LEGAL SOCIETY.

At a meeting of this Society held on April 20th, Lord Justice Atkin, the President, being in the chair, a paper on some aspects of the

### *New Regulations of Preservatives*

was read by Mr. C. Ainsworth Mitchell.

In the year 1921, said Mr. Mitchell, he had called attention to some of the difficulties met with in the Food and Drugs Act, both by those who had to administer the regulations and those who had to apply them. So diverse was the practice in regard to them that whether or not a conviction was obtained seemed to be chiefly a matter of geography. Local authorities in the past set up and acted upon their own standards. The regulations which would come into force next January would remove some of the present anomalies, but would carry forward some peculiar ones of their own which were likely to cause difficulties. He regretted that the evidence taken by the second committee on the subject was not published in full, as was the case with the first committee. It was difficult to see why boron preservative was not to be allowed; it could not be shown to have been more harmful than saltpetre, which had been in use from time immemorial. As to the use of salicylic acid for beverages, the first committee was misled by a trade witness who said that no preservative was necessary, and recommended that it should not be used in quantity more than 1 gr. per pint; but that witness had been found to be using a large quantity of it in his own products—namely, seven times as much. The second committee allowed the substitution of benzoic acid to 5 gr. per pint. Various deputations waited on the Minister of Health on the subject to point out the difficulties which would be met with in applying some of the regulations, and as a result modifications were issued. These modifications permitted increased proportions of preservatives in fruit pulp, pickles, and sauces. And two preservatives could be present in the same food, provided the regulation quantities were not exceeded. The amount of sulphur dioxide allowed corresponded with the fermentability of the different products. It was allowed in jam, but for some unknown reason it was prohibited in the case of orange marmalade. The regulations did not class alcohol as a preservative, though it certainly was, hence no account of it was taken in fixing the amount of preservative allowed in wine. This matter stood in need of considerable modification. Unfermented grape-juice and non-alcoholic wine made from it were allowed to contain 17 gr. benzoic acid per pint. Lemon squash, though more fermentable than grape-juice and impossible to sterilise by heat, was not allowed to contain more than 5 gr. of preservative per pint. Regulation No. 4 he regarded as a retrograde step; it stood in need of revision. He thought a declaration should be required in all cases in which preservatives were allowed. The objection urged by manufacturers was that such declaration might prejudice the sale of their products, but this was not borne out by the experience of those manufacturers who had voluntarily adopted the practice. Mr. Mitchell did not think that the consumption of beer would be reduced because it would contain three-fifths of a grain of sulphur dioxide per pint. Sweetened mineral waters might contain as much preservative as beer, and ginger-beer more, without the necessity of a declaration. Some of the foods in Schedule 1 should be transferred to Schedule 2. He anticipated difficulties in applying the regulations in the absence of generally accepted methods of determining the amounts of preservatives. He had urged upon the Ministry some standardisation, but apparently nothing had been done in the matter.

Evidently it was thought that a Ministerial warning on these matters would suffice, but Mr. Mitchell's view was that until the regulations were given statutory force there would be uncertainty as to what was and what was not permissible. The regulations which were to come into operation in January next represented the resultant of conflicting forces, but, on the whole, they could be said to be a great advance on the subject of the due preservation of food consistent with public health.

### *Discussion.*

Mr. E. HINKS (public analyst, Surrey) agreed that the whole matter was a compromise, as it must be, between what was desirable and what was feasible. In the end it would probably prove to be a matter of trial. If these instructions should bring the butter-supply to grief, there must be new regulations, but experience in the past was that what was dreaded did not usually happen. Some articles could easily be put on the market without preservatives, and sausages formed a case in point, except where they were sold long distances from the place of production. He did not think the regulations forbade preservative in marmalade. The regulations, on the whole, were a step in the right direction.

Dr. H. E. COX (public analyst, Hampstead) said there were now on the market sweetened mineral waters containing no preservative, and he thought a result of these new regulations would be that substances would be added to such beverages, constituting a retrograde step.

Mr. F. W. BECK said that for five years he had been fighting local authorities with regard to preservatives in food. He had been opposed to the general setting up of standards for foods, because in the few cases in which that had been done it had been proved to be to the detriment of the public. The law had hitherto been so unevenly administered by local authorities that it was better to have some sort of regulation. There were some borough and county benches who always followed their medical officer in cases of this kind and convicted, whatever the evidence brought forward. He was not sure that the trade felt satisfied with these new regulations, the main reason being that those concerned had not been allowed to know what was the evidence on which they had been framed. The prohibition of boric acid as a preservative was sure to be resented, and in regard to the whole matter he thought the Ministry were embarking on a dangerous experiment. Even if experience demonstrated the need for amendment, enormous damage to industries might occur in the meantime. Cold storage, for this country, was a futile proposition, though efficient on board ship and in large stores.

Dr. M. I. FINUCANE raised the question whether, in the interests of the individual consumer, it was necessary to have any artificial preservatives at all. There seemed no necessity for a scientific society to set trade and commerce on a pedestal.

Dr. KNYVETT GORDON, speaking as a bacteriologist, said one had to choose between having preservatives and bacteria, and he personally would rather have the bacteria. It was impossible to render a meat extract sterile, and in no stage of its preparation could its temperature be raised to the boiling point without spoiling the preparation. If we did not ingest many bacteria every day we should be liable to succumb to every disease which came our way, and these bacteria constituted a more effective protection than most of the vaccines specially inoculated for a set purpose. He did not think preservatives were necessary. The small quantity of formaldehyde used which the regulations coming into force next January would prohibit he was sure had not been harmful, and from the bacteriologist's standpoint it was one of the best preservatives which could be used. He spoke of an epidemic rash he had seen in children due to drinking milk heavily preserved with boric acid.

Mr. E. R. BOLTON (President of the Society of Public Analysts) said the public now knew where it stood in regard to these matters far better than before. Though the committee sometimes skated on very thin ice they had now produced something very definite. Boric acid affected some people adversely, to others it seemed to do no harm. It would have been well if the Ministry had issued a statement as to how the preservatives were to be determined.

Mr. J. R. BLANCO WHITE spoke of the conditions in France and the United States. In the former country less preservatives seemed to be used, while in the States cold storage was almost universal in the cities. One result of these regulations in this country would be that manufacturers of the cheaper articles of food would have to take more care of their products.

Mrs. BLANCO WHITE said that in 1918–19 she was in charge of a Ministry of Labour inquiry into preserved potted meats, margarine, and confectionery. The information given to the inspectors then by manufacturers did not tally with what they more recently tendered to the committee.

### *Reply.*

Mr. MITCHELL agreed that where preservatives could be done without it was advisable to omit them. Cold storage could not suddenly be put up and down the country, and if food did not keep people must expect to pay for it. Salt was a preservative, though not admitted in the regulations to be such, and he predicted that one result of these new conditions would be that certain foods would be heavily salted.

## LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on April 9th Mr. A. L. WHITEHEAD, the President, took the chair, and Dr. GEORGE COOPER (Leeds) read a paper on

### *Radiotherapy.*

Discussing the various conditions that responded favourably to this form of treatment, he spoke of the striking results obtained in lupus by combined treatment by artificial sunlight and local applications of the Kromayer lamp, and claimed that lupus could now be regarded as a curable disease. Very favourable results were also obtained in the treatment of rickets and tuberculous lesions by artificial sunlight, which was also being successfully used to hasten recovery in cases of chronic infection. Considering that only hopeless and inoperable cases of cancer were sent to the radiotherapeutic department, it could be said that a very fair proportion of cases of this disease yielded favourable results. Further progress in X ray therapy would probably come by the use of some sensitising agent before, during, or after X ray treatment. Dr. Cooper showed a number of cases illustrating his paper.

Dr. H. B. SCARGILL (Leeds) exhibited a large number of radiographs and lantern slides from the radiographic department of Leeds General Infirmary, and spoke of the great expansion of radiographic work at the institution during the last seven years.

Dr. L. A. ROWDEN (Leeds) demonstrated X ray photographs of hour-glass stomach, and expressed the opinion that the condition was much less frequently met with than it was 15 years ago. In his opinion the condition was sometimes congenital. In the acquired case he had seen a completely healed ulcer, although the opinion generally held was that a complete healing was rarely, if ever, found.

Dr. J. A. THOMPSON (Harrogate) demonstrated radiograms of the hip-joint showing conditions seen in spa practice. He also exhibited a series of radiograms of a case of aerophagia in a child 8 years old who suffered from chronic intermittent abdominal distension. The photographs appeared to show that the distension was due to swallowed air which finally passed into the bowel and caused distension of the small and large intestine.

## NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

AT a meeting held in Liverpool on March 19th Mr. W. GOUGH (Leeds), the President, took the chair, and Miss RUTH NICHOLSON (Liverpool) described three cases of

### *Carcinoma of the Cervix*

in women under treatment for syphilis and gonorrhœa. These cases had occurred, she said, amongst some 1500 patients at two clinics for venereal diseases under her charge for the last seven years. Another case of the sort had been reported by Arthur Helme in 1902. Gordon Luker[1] had described a case of squamous-celled carcinoma of the cervix in a 2-para, aged 28, under treatment for gonorrhœa at the London Hospital, and had remarked that no other case of a similar nature had arisen during the seven years the clinic had been in existence, emphasising the fact that the local treatment may have acted as an irritant. Herbert Spencer,[2] in his Lettsomian lectures of 1920, had stated his opinion that the relation of syphilis, soft sores, and gonorrhœa to cancer of the cervix was close, and that he had twice seen carcinoma of the cervix develop in patients who had previously had chancre of the cervix. These were the only cases which Miss Nicholson had found recorded. Her own cases were as follows:—

1. A single woman, aged 25, known to be a prostitute; no pregnancies. First seen in 1919, when she was being treated for syphilis. She then also had chronic urethritis and endocervicitis. No gonococci were demonstrated in the discharge, but later she developed salpingitis, and they were seen in vaginal smears. The treatment for syphilis was continued, and local applications of protargol and glycerine were used for the cervix for a period of five months. In 1921 she appeared with a recurrence of vaginal discharge. There were then no signs or symptoms of carcinoma. In December, 1923, she complained of intermenstrual hæmorrhage of one year's duration and was found to be suffering from a squamous-celled carcinoma of the cervix.

2. A woman, aged 40, married for 20 years, five pregnancies, all full-time living children, last eight years ago. First seen in 1921, with well-marked signs of secondary syphilis and a doubly-positive Wassermann; no primary chancre seen. No signs of gonorrhœa at that time, and smears from the cervix and vagina negative. She had probably been infected five months previously. She was treated for syphilis, and had had a negative Wassermann and no clinical signs for two and a half years. In February, 1924, three and a half years after infection and two months after her last visit to the clinic, she returned complaining of slight frequency of micturition. Vaginal examination revealed an irregular growth of the cervix, which bled readily. Microscopical section shows a luxuriant papillomatous growth originating from the columnar epithelium, which does not invade the stroma of the cervix, and therefore might be considered benign. The cells, however, are multi-layered, actively proliferating, and irregular in shape. These facts are in favour of malignancy. The closed adherent tubes show that a gonorrhœal infection was also present, and it is interesting to note that a year afterwards, on resuming marital relations, she developed acute urethritis and vaginitis, gonococci being demonstrated in smears from both orifices. Two years after operation she remains apparently free from recurrence.

3. A woman, aged 50, married 29 years; one full-time living child 28 years ago; no further pregnancies. Sent to the venereal department in June, 1925, suffering from tertiary syphilitic ulcers of the thighs. The Wassermann reaction was doubly positive. Urethritis, vaginitis, and endocervicitis were also discovered, and gonococci were found in the urethral and cervical smears. (Subtotal hysterectomy had been performed four years previously.) This patient had intravenous injections of neokharsivan and local treatment for the gonorrhœal infection for two and a half months. She stopped attending the clinic in September of last year owing to "neuritis" and reappeared four months later, in February of this year. She had noticed no discharge or hæmorrhage. On inserting the speculum to examine the cervix a small cauliflower-like mass was felt. The microscopical section showed a squamous-celled carcinoma.

In each of these cases, said Miss Nicholson, the presence of the gonorrhœal infection with its accompanying cervical discharge might have been a predisposing factor in the production of cancer. In Cases 1 and 3 local treatment might have caused further irritation. It was, of course, possible that the primary chancre had occurred upon the cervix in these cases, as it was not seen anywhere else. The youth and nulliparity of Case 1 were unusual with carcinoma, and so made it more probable that venereal infection was a factor.

Dr. H. LEITH MURRAY (Liverpool) described a case of

### *Carcinoma of the Cervix of a Prolapsed Uterus.*

The condition, he said, appeared to be surprisingly rare, this case being only the second he had seen.

Mrs. M., aged 43, gave a history of moderate and not very troublesome prolapse for some years. She had had a family of four, the last eight years previously. She had been under treatment for pulmonary tuberculosis for two years, and was considered to be holding her own; she had not recently lost weight. Her cough, however, was troublesome, and to this was attributed an aggravation of the prolapse, which had occurred during a few weeks before she saw Dr. Murray. During those weeks there became apparent for the first time, so she stated, a protrusion at the vulva, which bled readily and almost continuously.

Examination showed the patient to be thin, but not wasted. At the vulva there was a protrusion about 2¾ inches long, of sloughing, infected, friable carcinoma. The cervix was amputated and radium treatment was given. There was no recurrence of vaginal bleeding, but she died 21 months later, apparently from the lung condition. Sections even of the deepest part of the growth showed intense infection of a very active squamous carcinoma of rather unusual type.

It was of interest, said Dr. Murray, to note that the only case of carcinoma of a prolapsed uterus recorded in the *Journal of Obstetrics and Gynæcology of the British Empire* (by Dr. Russell Andrews in 1910) gave a similarly short history of protrusion, although the length of the uterus in that case made it certain that there had been a visible prolapse for some considerable time. In the present case the cervix itself lay beyond the vulva, and the protrusion was not merely a proliferative cauliflower carcinoma.

Dr. MURRAY also reported a case of

### *Hydatid Cyst of the Cervix Uteri.*

Hydatid cysts of the internal genitalia, he said, were very rare, and some, if not most, of them were undoubtedly due to direct extension from adjacent cysts.

Mrs. S., aged 32, had spent her whole life in a village on the River Dee, and had never, even for one night, been away from home. She did not keep dogs and had no particular liking for uncooked vegetables. In January, 1914, she was admitted to the Hospital for Women, Liverpool, suffering from ascites, and she was later found to have a retro-peritoneal cyst between the right kidney and the liver. This was opened. In November, 1925, she complained of pain radiating from the left of the umbilicus across the right side to the back. This had troubled her for at least ten years, and more recently she had felt when walking that there was a "big lump" in the pelvis. Examination showed a swelling the size of a 16 weeks' pregnancy, the lower pole of which depressed the vault of the vagina. There was a doubtfully cystic area posteriorly but the main mass felt solid.

Abdominal operation was done on Nov. 11th, 1925. Kelly's method of approach, by bisection of the small uterine body lying on the top of the swelling, was adopted, and after the abdomen had been thoroughly packed, an incision into the cervix was made. A cystic swelling with a thick capsule was at once exposed and opened. It was judged to be rather larger than a full-term fœtal head. Very numerous daughter cysts, varying in size from a hen's egg downwards, escaped, and, with difficulty, the cyst wall was then shelled out from the surrounding cervix. After a troublesome dissection, mainly by finger pressure, the whole of the capsule was removed in a single piece. There was no sign of any other cyst in the pelvis, abdomen, or kidney regions. It would have been impossible to remove the remaining thin shell of cervix, and the cavity, therefore, was reduced by sutures and a subtotal hysterectomy, with removal of both appendages.

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[1] THE LANCET, 1922, ii., 71.

[2] Ibid., 1920, i., 530.

There was no doubt that the cyst lay wholly within the substance of the cervix, for a most definite and intact capsule of cervix was visible at the end of the enucleation. Its situation appeared to be in the posterior wall, but the cervical canal was not seen. There were no peritoneal adhesions whatsoever The patient made an uninterrupted recovery When seen in March 1926 she complained of some discomfort in the pelvis, and at examination a little thickening apparently in the recto-vaginal space, was felt; this was probably inflammatory

The first genuine case of primary hydatid tumour of the uterus occurring in this country, said Dr Murray, had been recorded by Giles.[3] De Vries,[4] who reported a case in 1904, found at that time only seven genuine cases in literature. Tittell[5] recorded a uterus the size of an eight months' pregnancy with ovaries each the size of a child's head; all three organs contained an enormous quantity of cysts and booklets, without evidence of hydatid cyst elsewhere. The present case could not, of course, be compared with those just quoted, except in its suggestion of infection of the uterus through the blood stream rather than the digestive tract.

Dr **ARTHUR GEMMELL** (Liverpool) reported a case of congenital absence of the vagina associated with full development of the uterus and appendages and the presence of extra digits. The patient was 18 years of age and hæmatometra and hæmatosalpinx were present. The secondary sexual characteristics were well developed Absence of the vagina associated with hæmatometra, said Dr Gemmell, was a rare condition, and he had been able to find only 14 cases in the literature.

Dr **J E GEMMELL** (Liverpool) showed a specimen of carcinoma of the body of the uterus.—Dr **J W A. HUNTER** described a case of acute post-partum œdema of the cervix and Dr **G W THEOBALD** read a paper on the Toxæmias of Pregnancy

## MANCHESTER MEDICO-CHIRURGICAL AND OBSTETRIC SOCIETY

AT a meeting of this Society held on April 21st Mr **A. C MAGIAN**, the President, took the chair and introduced a discussion on the

### *Compulsory Notification of Cancer*

Notification, he said, would show up the enormous number of cases at present unknown to statisticians. Probably many thousands of people died annually without a record of the actual cause of death because the general practitioner was apt to gloss over the matter for the sake of the relatives' feelings. This must not be counted against him, but rather against the system Notification, however, would prevent an incorrect record of a case of cancer and would also compel early treatment Early surgical treatment still gave the most successful results. Unfortunately many patients could not get early treatment at the present time owing to overcrowding of the hospitals. Notification, by calling attention to every case, would compel an increase in hospital accommodation, just as compulsory notification of tuberculosis brought about the provision of sanatoriums and clinics for the tuberculous. No doubt it would involve the appointment of many officials and produce friction and no one would be grateful for its enforcement This, however, must not stand in the way of a measure for the public good In addition to compulsory notification, Mr Magian urged that information on uterine cancer should be posted in all public conveniences for women, and that wherever notices about venereal disease were exhibited similar notices on tubercle and cancer should appear An additional 1*d* on the rates would cover the costs of notification and of new beds and would allow patients to have almost immediate attention

Dr **C MARLEY CASS** said that compulsory notification would be very hard to enforce and might cause sufferers to conceal their complaint even longer Any scheme, however, that would really bring about better accommodation and earlier treatment ought to be supported

Dr **S W H STUART** was opposed to any scheme that would lead to an increase in the present army of officials. The work of the general practitioner was becoming a burden to him by reason of the ever-increasing number of regulations and restrictions and the filling up of forms.

Dr **JOHN HOWE** thought that compulsory notification would probably be in the best interests of the patient.

Dr **ENID STOWELL**, Dr **P T CATTO**, Dr **HELM**, Dr **J G SHANKLIN**, Dr **OLIVER**, and other speakers took part in the discussion.

The **PRESIDENT**, in his reply, said that practitioners keenly resented the delays in admission to hospital. He believed that the State ought to take over the hospitals and pay the bare costs of administration The general public should then be asked to subscribe towards the extra cost of good furniture, equipment, and small luxuries. This scheme would ensure hospital accommodation at an early date for every deserving case, and yet would not remove the praiseworthy element of voluntary effort.

## ABERDEEN MEDICO CHIRURGICAL SOCIETY

A CLINICAL meeting of this Society was held on April 1st, Dr **J CROMBIE**, the President, in the chair

Dr **A. G ANDERSON** showed two patients. The first was a girl of 12 years with amyotonia congenita. The main features of the case were the extreme flaccidity of the muscles diminished reflexes, and the possibility of placing the child in fantastic attitudes. She could sit up but was unable to raise herself into a sitting posture when lying on the back. The second was a man aged 21 suffering from pseudo-hypertrophic paralysis. The condition began between the ages of 14 and 15, which, said Dr Anderson, was rather unusual. There were eight in the family. The eldest was affected, the five next were normal, and the two youngest suffered from the disease. The patient could walk fairly well and was able to pursue his university studies.

Dr **A W HENDRY** showed a woman of 25 with well marked signs of acromegaly She was seen first about a year ago when complaining of headache and fits of an epileptiform nature. These occurred every four to seven weeks. She noted the enlargement of the jaw, hands, and feet when aged 18 No abnormality of the nervous system had been found, but an X ray showed a greatly enlarged sella turcica.

Dr **JOHN CRAIG** showed a little girl who developed whooping cough in December, 1924 There were no convulsions and no unexplained fever, but on getting up in January, 1925, she noticed a weakness of the right hand arm, and leg The case was one of undoubted infantile hemiplegia. Dr Craig mentioned that athetosis was more common in cases of infantile hemiplegia than in adults. The case was shown as illustrating a rare sequel to whooping cough

Mr **G H COLT** showed a female patient aged 20 years who had suffered from a severe non-compound fracture of the right frontal bone. The unconsciousness on admission was not profound and she had bleeding from the right ear A large trephining operation was done on the night of admission and with the exception of a slight recession of the right eye and a slight inconstant nystagmoid movement and loss of memory for names—but not for faces—she had made a very good recovery The question of compensation was discussed at length

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[3] THE LANCET, 1911, i., 1700

[4] Quoted in discussion of Giles's paper (Proc. Roy Soc. Med April 6th, 1911).

[5] Arch. für Gynäk., 1907, Bd. lxxxii, p 180

# Reviews and Notices of Books.

### ARABIAN MEDICINE AND ITS INFLUENCE ON THE MIDDLE AGES.

By Dr. DONALD CAMPBELL, late Captain, Royal Army Medical Corps. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1926. Vol. I., pp. 208; Vol. II., pp. 235. 21*s.*

THIS painstaking book is a desirable acquisition to the store of works on medical history in English. So far as we can recollect the only other work on this subject in our language is that by the late Prof. E. G. Browne in his FitzPatrick lectures for 1919–20, a review of which appeared in our issue of August 6th, 1921. These lectures were a brilliant sketch of a period of medical history which is full of romance; while Prof. Browne treated it mainly from the picturesque, Dr. Campbell writes from the scientific point of view. Indeed, the two books may be likened to a drawing by Turner, say, the water-colour of Rouen in the National Gallery, contrasted with a sketch of the same by some strictly accurate architectural draughtsman.

The first volume is an elaborate survey of Arabic medical writings and writers in both the Eastern and Western Caliphates, and of their influence upon European learning, while a whole chapter is devoted to the Latin translators and the College at Toledo; another chapter gives a list of Arabic medical MSS. of Greek authors extant to-day. It is curious that, in speaking of Rhazes and his Liber de variolis et morbillis, Dr. Campbell does not mention Mead's translation into English (1747), although he does refer to Greenhill's (1848). We imagine that the Latin translation, which Dr. Campbell mentions as appearing in London in the same year, was that which Mead caused to be made from the Arabic by Dr. Thomas Hunt, professor of Arabic in the University of Oxford. Dr. Campbell's second volume is, perhaps, even more valuable for purposes of reference than the first, for it is made up of a careful list of translators into Latin of Arabic medical works, and a complete reconstruction of the Galenic Library as it was known in the Middle Ages. This piece of work will be a standby for medical historians. We suggest that in a future edition Dr. Campbell should always specify where a work attributed to Galen is spurious, as, for instance, the treatise De Dinamidiis. We are glad to see that the De Ingenio Sanitatis is rightly stated to be an alternative name for the Methodus Medendi, instead of the De Sanitate Tuenda, which is often given. In Nos. 126 and 205 of the catalogue there seems to be confusion as to the treatise called De Interioribus Membris or Anatomia Interiorum and the treatise De Anatomia, of which Dr. Campbell says that Greek MSS. are known. The treatise called De Interioribus Membris was probably written in Latin in the twelfth century and is often ascribed to Ricardus Anglicus. It was fathered on Galen because the prologue begins "Galienus testatur or Galieno testante," and it was therefore catalogued under Galen in European library catalogues. The old British Museum catalogues have it so, but not the present one. The De Accidenti et Morbo (No. 204) is unknown in Greek and is probably not genuine. The late Dr. Frank Payne conjectured that it might be a compendium or abstract of several books about symptoms such as the De Morborum Causis and De Symptomatum Causis. We have noted a few misprints—e.g., Vol. I., pp. 121 and 122, Chartres is spelt Chatres. In Vol. II., p. 148, De doloris capitis should read De Dolore, and on p. 189, De voce et angelitu should surely read De . . . anhelitu.

Dr. Campbell has done a fine piece of work, and the copious bibliography testifies to his industry and thirst for research. No such work can be original. The ideal medical historian would have to be an Arabic, Syriac, Greek. and mediæval Latin scholar, and in addition an expert palæographer; the equipment is too vast and various for one author. As Dr. F. J. Payne, himself an expert, said: "The whole subject of Mediæval Medical Literature is very interesting and has never been worked out thoroughly. It could only be done by studying the MSS. and comparing the different *groups* of versions which appeared at different times, and were found collected together in the same MS. The association of these versions is by no means fortuitous; but shows what books were adopted as text-books, and hence transcribed into the compendiums which were used by students, and taken away by them from Montpellier and other schools to different parts of Europe." Dr. Campbell's book is a most valuable gathering together of present-day knowledge.

### CANCER OF THE RECTUM.

By W. ERNEST MILES, F.R.C.S., Senior Surgeon to the Cancer Hospital and Surgeon to the Gordon Hospital for Diseases of the Rectum. London: Harrison and Sons, Ltd. 1926. Pp. 72. 7*s.* 6*d.*

THE Lettsomian lectures delivered by Mr. Miles in 1923 have been reprinted from the Transactions of the Medical Society of London in book form. The first lecture deals with the pathological anatomy of cancer of the rectum and its early spread, and expounds views based upon a very large experience. The second lecture describes clinical features of the disease and the general principles of treatment, and the thesis is that any operative attack from below is doomed to failure in the light of facts brought out in the first lecture. Mr. Miles's own experience in perineal excision of the rectum has been wholly unsatisfactory. The third lecture deals with the abdomino-perineal operation of which he has long been the exponent. The mortality, it is interesting to note, has been diminished enormously of late years. The author attributes this to the employment of spinal anæsthesia. The book should be read by all surgeons who operate upon such cases.

### LIGHT AND HEALTH.

By M. LUCKIESH and A. J. PACINI. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. Pp. 302. 22*s.* 6*d.*

A BOOK on biophysics that is designed for "general readers, mothers, nurses, public health officials, and others interested in health" has several obstacles to surmount. The technicalities of language are, perhaps, the least of these. The greatest stumbling-block to an author who would popularise science consists in the fact that the general reader, untrained in scientific method, cannot by himself distinguish an attractive hypothesis from a generalisation that is well substantiated by experiment. The authors plead that "a book of this sort will have little pioneering value if the authors did not venture beyond the definitely known, for conjectures are the lines of communication between the known and the unknown." Unfortunately, the reader is not often informed in the text when these excursions along the lines of communication are in progress, and, indeed, the critical reader will be tempted to wonder whether the authors themselves are always fully aware of their own boldness. The confidence with which they assert, on evidence that might well be conclusive to the general reader but is not impressive to the immunologist, that athletes in training have a greater immunity to typhoid fever than non-athletic bookworms (p. 219) is a case in point. Their suggestion, in this case it is at least plainly a suggestion, that the increase of pneumonia and influenza in the winter months occurs because we are then more anæmic from want of sunlight shows their bias. Their faith in the New York Italians' taste which, they assert, was able to distinguish the absence of vitamins in spaghetti that had been dried indoors rather than on the fire-escape (pp. 239, 240) is typical of their enthusiastic admiration of ultra-violet light.

On the other hand, their ideas on the physics of radiant energy are stimulating, also the later chapters on the physiology of light and the practical value of various systems of lighting. Experts in these subjects will use their own knowledge and experience as a safeguard against the authors' enthusiasms, while the general reader who seeks a new and not necessarily orthodox point of view will find it here.

### THE EFFECT OF FEVER ON METABOLISM.

*Untersuchungen über den Stoffwechsel des Kindes im Fieber.* By Prof. W. BIRK (Tübingen). Berlin: S. Karger. 1926. Pp. 104. M.7.

IN this monograph the author sets out the result of research which he undertook on the effect of fever on the metabolism of protein and salts in children. Previous work on the subject is reviewed, one of the objects of the investigation being to test the validity of Naunyn's expression "toxogenous protein-destruction." An account is also given of the rôle of the autonomic system in regulation of temperature and of the metabolism of albuminoids and salts, the propinquity of the centres governing these functions being indicated. The results obtained by estimation of nitrogen and salts in the food and excreta are tabulated and their interpretation is fully discussed. Disturbance of nitrogen balance was found even in the pre-febrile stage in most cases, but it was not always a loss, nitrogen retention being by no means uncommon. Among other conclusions to which the author was led are the following: the loss of albuminoids is not a direct consequence of the pyrexia, as Naunyn supposed, but is due to a toxic disturbance of the cerebral centres regulating protein metabolism. Nitrogen loss is a constant accompaniment of the febrile stage, and is probably due to temporary undernutrition; no relation could be found between this loss and the weight curve. In the post-febrile stage a loss of nitrogen or a diminished nitrogen retention was found.

### OUTLINE OF SURGICAL NURSING.

By S. J. WOODALL, M.A., M.R.C.S., L.R.C.P., D.P.H. London: Law and Local Government Publications, Ltd. 1926. Pp. 176. 5s.

THIS outline of surgical nursing appears to be a reliable little book and will doubtless be of use to nurses. There is little to find fault with and a good deal to commend. The method recommended for administering rectal saline and the apparatus depicted we should like to see more generally used. There is no reference in the index to proctoclysis or rectal saline administration. There is a slip on page 81, where a nurse, after preparing her hands for taking part in an operation, is enjoined to cover her hair completely with a sterile cap and mask, secured by tapes at the back of the head. Few nurses are likely to do this without contaminating their hands, and it would appear to be the business of an assistant.

## JOURNALS.

JOURNAL OF PHYSIOLOGY. Vol. LXI., No. 1. 1926. London: Cambridge University Press. Pp. 150. 12s. 6d.—This journal is now edited for the Physiological Society by an editorial committee composed of E. D. Adrian, A. V. Hill, J. B. Leathes, and Sir C. S. Sherrington (chairman). The first 27 pages of this issue are devoted to an article on Prof. John Newport Langley, who for over 30 years was editor of the journal, and an account is given of his life and work and a full list of his publications—over 170 in number—on work begun in 1873 and continued without intermission until his death in November, 1925.—The Effect of Stimulation of the Vagi on the Pyloric Region of the Stomach, by E. D. McCrea and B. A. McSwiney. Dissection of the anterior vagal trunk and its hepatic branch in man, dog, and cat show that the strands given off to the pylorus contain vagus fibres. The authors found that the hepatic branch of the vagus in cats and dogs supplies and regulates the pyloric region and that the movements of the isolated pyloric region are similar to those observed in the pars pylorica of the intact stomach. The pyloric region does not exhibit the property of postural adaptation. —The Influence of Exercise on the Inorganic Phosphates of the Blood and Urine, by R. E. Havard and G. A. Reay. As it is very probable that a hexose phosphate, lactacidogen, plays an important part in muscle contraction as the precursor of lactic acid, the authors sought to determine how far the inorganic phosphate of the blood is affected by the changes taking place in muscle. It was shown that after short, vigorous, unaccustomed exercise the inorganic phosphate in the blood first rises a little above, then falls considerably below, the normal value in men. In men in athletic training and taking exercise regularly this fall below normal is much less marked. There is a sudden, fleeting, but very marked increase of inorganic phosphate excretion in the urine for about three-quarters of an hour after short, vigorous exercise, followed in some cases by suppression. There is a less constant but occasionally very marked increase of ammonia excretion. There is a very marked suppression of chloride excretion during the same period. It is thought probable that the changes observed in blood phosphate are due mainly to changes in the lactacidogen content of the muscles. The changes observed in the urine seem to be due mainly to the fleeting acidosis caused by the lactic acid formed.—The Impulses Produced by Sensory Nerve-endings, Part I., by E. D. Adrian. The author has recorded the action currents accompanying afferent impulses in the frog's sciatic nerve when the gastrocnemius is stretched by a weight, and has also obtained records from the cat's internal saphenous nerve, from the cat's and rabbit's vagus when the lungs are inflated, and from the cardiac depressor nerve of the rabbit. Probably many of the oscillations observed represent action currents in a single nerve-fibre, and these have the same general form and time relations in all the sensory nerves in which they can be isolated sufficiently for measurement. There is no evidence that an increase in the stimulus increases the size of the action currents in single fibres, but the frequency of the impulses in the nerve trunk increases and leads to interference and overlapping of impulses in different fibres. When a muscle is stretched by a weight the discharge of afferent impulses continues for as long as ten minutes, provided that the tension is maintained. Similarly the passage of the impulses up the vagus continues (for as long as 20 seconds) if the lungs are held in the expanded state. No evidence was found of any renewed discharge of impulses in the vagus on deflation of the lungs.—The Elasticity of Skeletal Muscles, by J. Lindhard and J. P. Möller. The coefficient of elasticity of the excised sartorius of the frog, when resting and excited, was determined. Excitation decreased the coefficient. The decrease took place rather suddenly, while the original resting level was regained gradually and independently of the simultaneous changes in length.—The Interpretation of the Electromyogram of Striated Muscle during Contractions set up by Central Nervous Excitation, by J. G. Dusser de Barenne and J. F. G. Brevée. In the decerebrate cat the cervical spinal cord was laid bare and by mechanical stimulation, once or twice a second, of the dorsal surface "tetanic" contractions of striped muscle—e.g., *triceps brachialis*—were elicited, accompanied by frequent and irregular action currents. The frequency of these varied in different individuals from 100–200 per second; 100 may be regarded as the average. They resembled closely the action currents led off from striped muscle under other forms of central innervation, such as voluntary contraction in man, the respiratory contractions of the diaphragm, and decerebrate rigidity. In the same individual the frequency of the action currents under central innervation is the same for different strengths of contraction. What differs is their amplitude; this is larger in vigorous contractions and smaller in weaker contractions. In nearly all the experiments no appreciable diminution of the frequency of the action currents of the contracting muscle after section of the posterior roots could be observed. By producing with novocaine a local narcosis of the sensory spinal mechanisms, and thus cutting off the centripetal impulses upon the motor neurons, the frequency of the action currents was distinctly reduced. With increasing narcosis the frequency gradually became lower until there were only 50 to 70 action currents per second. At the same time the irregularity of the normal electromyogram gradually disappeared until a very regular type of action currents, often a true sinusoidal rhythm, occurred. These slow and regular action currents represent the "proper" rhythm of the impulses of the motor neurons, free from the various centripetal impulses, which play normally upon the neurons and give rise to the irregularity seen in the normal. The electromyogram of striped muscle during contractions of central origin is a true image of the central impulses reaching the muscle from the central nervous system along the peripheral motor nerve-fibres.—On the Factors Concerned in the Production of Pulmonary Œdema, by R. K. Lambert and H. Gremels. A dog's heart-lung preparation was used, the circulating fluid being defibrinated dog's blood. Œdema supervened rapidly (½–1 hour) if defibrinated blood which had stood for 24 hours was used or if metallic poisons were introduced into circulation. Degenerative changes occurred in capillary endothelium of lungs and heart. The œdema in its initial stages was unattended by changes in resistance of blood flow through lungs. The authors suggest that toxic action of blood may be partly responsible for pulmonary or cardiac œdema observed clinically.—The In Vivo Permeability of the Red Corpuscles of the Rabbit, by J. T. Irving and H. D. Kay. An attempt has been made to determine whether the administration of insulin to the rabbit brings about permeability changes in certain of its body cells. In preliminary experiments the partition of sugar or, better, reducing substance between the corpuscles and the plasma was determined before and at intervals after the injection of insulin. The reducing substance in the corpuscles did not decrease in a manner parallel with the decrease in plasma "sugar" during the hypoglycæmic period. Can any changes in the permeability be brought about by insulin injected in vivo? It was found that in the blood of the normal rabbit only a relatively small proportion—0·02 per cent. reckoned as glucose—of the reducing substance is present in the corpuscles. Addition of anticoagulants—sodium citrate and others—to shed blood alters fundamentally the permeability of the corpuscular membrane to reducing substance. The amount of reducing substance in the rabbit's corpuscle in vivo is both relatively and absolutely increased by previous injection of insulin, of "inactivated insulin"—i.e., insulin rendered no longer capable of producing hypoglycæmia when injected into rabbits, but otherwise changed as little as possible—and of peptone solutions. It is almost certain that glucose is still present in rabbit's blood at the stage of hypoglycæmia at which convulsions occur. Until a pure substance of definite chemical composition is isolated the name "insulin" cannot be precisely used, and may cover a number of factors beside the one producing hypoglycæmia.—On the Nature and Significance of Vagus Escape, by R. J. S. McDowall. Isolated observations of other workers have suggested that vagus escape may be due to increased blood pressure in right side of heart. Experiments on anæsthetised cats showed striking rise of venous pressure on vagus stimulation; after a brief period heart was markedly accelerated. If the rise in venous pressure was prevented, vagus escape did not occur.—The Action of Adrenalin and Ergotamine on the Uterus of the Rabbit, by J. H. Gaddum. The effects of these two drugs on rabbits' uterus—pregnant and non-pregnant—were studied on parts of the organ suspended in a bath of Ringer's fluid.—The Relation of Secretin Formation to the Entrance of Acid Chyme into the Small Intestine: the Properties of Secretin, by J. Mellanby and A. St. G. Huggett. An account of this paper will be found on p. 920 of this issue of THE LANCET.

THE INDIAN JOURNAL OF MEDICAL RESEARCH for January, 1926, records an accomplished activity in the investigation of clinical, pathological, and sanitary problems in which India may well take interest and pride. Shortt, Bairand, and Craighead describe and illustrate a massive infection of the pharynx of *Phlebotomus argentipes* with *Herpetomonas donovani* eight days after feeding on a kala-azar case.—Hutchinson's well-illustrated and informative paper on photography from the microscope is timely, in view of the growing habit of microphotographic illustration, and its not infrequent failure to illustrate.—Cornwall and Beer, studying paralyses after treatment with antirabic vaccine, find that fresh normal nerve substance is toxic to both rabbits and men when injected subcutaneously; some showing paralysis after less than 20 mgm. per kilo body-weight, others tolerating easily 1 g. per kilo. Phenol renders the nerve substance slightly less toxic. It is desirable to be able to increase the dose of the antigen, and it is more practicable to neutralise the toxicity of the vehicle than to separate the antigen from it.—Greval and Row give a careful account of the first case of undulant fever diagnosed and treated in Aden.—Mundaliar, Raman, and Menon describe a case of kala-azar in whom the infection must have been acquired on the *west coast* of India. They suggest that the geographical distribution of kala-azar in India requires revision.—Covell, using the Clayton Lane technique in a hookworm survey of the troops in Dehra Dun, finds the Gurkhas' infection twice as high as that of the gunners and drivers recruited in the Punjab. It is suggested that a hookworm survey of all Indian troops be carried out, using, for diagnosis, Clayton Lane's method of direct centrifugal floatation; it is easy, rapid, and accurate; and for mass treatment beta-naphthol.—Sinton, from his studies in malaria, with special reference to treatment, concludes that, in the malignant tertian malaria of Northern India, 30 gr. quinine daily for one week, combined with alkaline treatment (mist. sodii bicarb. gr. 60, sod. cit. gr. 40, calc. carb. gr. 2½, aq. ad. 1 oz.) cures at least 80 per cent. of cases, and that patients infected with *P. falciparum* are much more easily cured by the same doses of quinine than are those infected with *P. vivax*. He found little or no advantage was gained in the diagnosis of uncured malarial infections by provocative infections of adrenalin or strychnine.—Arland describes the remarkable rejuvenescence of body and mind, and the sexual recovery, observed in two aged, decrepit, tremulous, and sexually unresponsive Busrah "country" dogs, after vaso-ligation.—Brahmachari records a case of hæmoglobinuria in a boy, aged 14 years, whose peripheral blood and liver puncture smears revealed L.D. bodies and no malarial parasites. Hæmoglobinuria began six hours after oral administration of 8 gr. quinine, and increased and diminished concurrently with the fever paroxysms. There was a large hard spleen, and fever intermittent with double rises every 24 hours. When the hæmoglobinuria was passing off, the blood from liver showed distinct hæmolysis; at the same time the peripheral blood showed very faint hæmolysis, and the urine very slight hæmoglobinuria. In the liver, therefore, there was active hæmolysis, as in the case of quinine hæmoglobinuria previously recorded by him and Sen. This is the second case in which he had found hæmoglobinuria in kala-azar. The whole volume of 26 papers, all of high standard and interest, by various authors, some only of whom have been mentioned above, may confidently be recommended, especially to all engaged in tropical medicine.

THE LANCET.

LONDON: SATURDAY, MAY 1, 1926.

## ECONOMY BILL: SOME MEDICAL ASPECTS.

THE Budget figures put forward with great clearness by the Chancellor of the Exchequer show the difficulty of securing a credit balance in national finances—and that without taking the coal menace into consideration. Thus those who demur at any processes of economy should show grounds for a belief that the particular measures for saving will result either in waste of previous efforts on which money has been spent, or in an increase of expenditure in the near future. On both these grounds many of the medical profession view with apprehension certain sections of the Economy (Miscellaneous Provisions) Bill. Various amendments brought forward when the Bill was in committee, pleading for the omission of clauses which might be worked in a manner prejudicial to health, were rejected by large majorities, voting being practically on party lines. The medical profession recognise as good citizens that money must be found with which to carry on, and it is to be hoped that some of the forebodings expressed in the amendments will not prove true, and that valuable activities in behalf of public health, of the health of children especially, will not have to be curtailed until their utility is gone. Anything like a supervision of local education which allows, for example, the spread of ringworm through relaxation of the methods for its control will be deplorable, even though it can be supported by some calculation of averages extending over and applied to various areas.

In one of the debates Sir JOHN SIMON told a story of a treatise by a learned continental physician. In the body of the treatise it was said that on an average a certain rare disease attacked the human race at about 45 years of age, and in an appendix a record of the cases was given; they amounted to two—in one the disease removed an infant of six months, and in the other it terminated the career of a nonagenarian. The value of averages, wrongly used, is well illustrated by this joke, and Mr. STANLEY MORRISON pointed out that a significant meaning lay beneath it. There are 526 special schools in England and Wales providing education for the blind, the deaf, and the physically and mentally defective, of which London maintains 174. Mr. MORRISON urged that this splendid system of special schools, which ought to serve as a standard to which other centres should average up, might—the watchword being rigid economy—lose its efficiency by the average being taken downwards. In similar vein Dr. HADEN GUEST, speaking as a past medical inspector for the London County Council, indicated the impossibility of arriving at comparisons as between one area and another in respect of school population, a population which, he said, must be regarded medically from the point of view that the children are human beings and not from the point of view of the money expended. Dr. DRUMMOND SHIELS supported an amendment which by limiting the proposed measures of economy to new educational expenditure would leave unhampered existing progressive measures, and found an apt illustration in the practice of dentistry. He pointed out that dental trouble was being reduced to a very large extent owing to the activities of the dental centres, and that a wide movement, successfully inaugurated in London, was fast taking root in the provinces, a position which, he urged, ought not to be altered for the worse, even if it could not be promoted by larger support. The practical outcome of these and similar representations was nil as far as any alteration in the measure, but good must have been done by the warnings. Ill-health, and especially ill-health in the young, is a costly and wasteful affair to the community, and under the wide discretions which the Economy Bill will allow, it must be hoped that this will always be remembered by the authorities. It is far easier to closure health activities than it is to set them going—levelling-down is simple and levelling-up is hard.

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## CEREBRAL TUMOURS.

THE second scientific sitting of the International Congress of Surgery, held a few days ago at Rome, was given up to the consideration of cerebral tumours, and was remarkable for the great variety of opinions expressed as to the best methods of treatment and the results which might be expected. The wide differences in technique of the different surgeons who shared in the discussion showed what an immense amount of attention has in recent years been paid to this difficult branch of surgery, and it suggested that, in spite of all the advances which have been made, the perfect technique for opening the skull has yet to be discovered. On certain points there was universal agreement such as:—the importance of early diagnosis and of operation before the symptoms of general pressure have appeared; the necessity for perfect hæmostasis in the early stages of each operation, and for conserving the patient's resources to meet the formidable demands made upon him when pressure is released; and close collaboration between the surgeon and the neurologist at every stage both of diagnosis and of treatment.

In opening the discussion Mr. HANS BRUN (Lucerne) described in great detail his technique for craniotomy, founding his observations on his own series of 458 cases. Operating entirely with local anæsthesia he takes the most extreme precautions to prevent the slightest loss of blood, making his incision in very short sections and ligaturing every artery as it appears. After drilling a preliminary hole with a burr, he divides the bone exclusively with Krause forceps, packing each section of the groove with gauze impregnated with a solution of gelatin. Where he operates in two stages he does not raise the osseous flap at the first stage, but contents himself with a mere division of the bone around the free margin of his flap. On raising the flap at the second operation he thus has the advantage of exposing a dura mater which has not been disturbed. Dr. DE MARTEL (Paris) adopts an entirely different technique (in his absence his paper was circulated at the Congress), although he also operates under local anæsthesia. After incising the scalp with every precaution to avoid loss of blood he divides the bone by mechanical means, using a powerful engine of his own device, fitted either with a special burr or with a circular saw. By these means the dura mater is reached with rapidity and apparently without discomfort to the patient. He lays stress on opening the dura only after reducing cerebral tension by ventricular puncture, hypotonic intravenous injections, or rectal injection of magnesium sulphate. Mr. PERCY SARGENT (London) (also unable to be at the Congress) presented a paper of great interest founded upon his own series of 336 operations for cerebral tumour. He laid great stress upon a knowledge of the exact situation of a tumour, its pathological nature, and the degree of intracranial pressure to which it had already given rise. He pointed out how mistaken was the idea that the trinity of headache, vomiting, and optic neuritis was the true index of cerebral tumour, regarding these rather as indications of impending death, and he urged the importance of learning to appreciate early symptoms, and especially the first signs of papillœdema. It was possible, he thought, to diagnose the situation of a tumour correctly in 90 per cent. of cases by clinical means alone, and he deprecated the necessity for such methods as ventriculography. A consideration of the history of the case and of the ascertained situation of the tumour often made it possible to form a shrewd idea of its histological nature. Thus cerebello-pontine tumours are mostly neuro-fibromata, pituitary tumours are adenomata, and cerebellar tumours are gliomata. Tumours of the cerebrum are almost invariably gliomata or endotheliomata, and even in the frontal and post-central regions where endotheliomata are most common, the gliomata out-number them by two to one. Mr. SARGENT'S statistics repay study. In summing up his experience of cerebral glioma, he stated that about 25 per cent. of the patients die shortly after operation, about 50 per cent. within eight months, leaving 25 per cent. to make a good recovery, many of them being able for several years to live useful lives and earn their own living. The outlook is more favourable than this with cerebellar glioma, for symptoms tend to arise at an earlier stage, the tumours show a remarkable tendency to cystic degeneration, and lost cerebellar function is readily compensated. As compared with glioma of the cerebrum the operative mortality is less than half, the proportion of good recovery is higher, and the average survival nearly twice as long. Oddly enough the operative mortality of endothelioma exceeds that of glioma, presumably owing to the radical nature of the procedure, but Mr. SARGENT can point to 46 per cent. of good recoveries after removal.

Later in the sitting Prof. ARCHIBALD YOUNG (Glasgow) contributed some interesting statistics and described a novel procedure for supporting the bulging brain after extensive trephining for decompression. Prof. ADSON, of the Mayo Clinic, gave a fine cinematograph demonstration of trigeminal neuralgia and its treatment. The discussion concluded with a debate on different methods of opening the skull. Mr. A. R. JENTZER (Geneva) showed an ingenious trephine by means of which a disc of bone, two and a half inches in diameter, can be rapidly removed without the slightest risk of injury to the dura; and Mr. H. S. SOUTTAR (London) showed a new form of craniotome in which a cutter, fitted to a powerful lever, turns round an axis which has first been fixed to the skull itself, so that large osteoplastic flaps can be fashioned with ease and rapidity. The sitting suffered, as all such international occasions must suffer, from the volume of material presented and the limited opportunity available for discussion. All who are interested in cerebral surgery should read the papers as they appear at length in the printed proceedings of the Congress.

# THE TECHNIQUE OF PERORAL ENDOSCOPY.

DIRECT visual examination of the bronchi and œsophagus has its home in Jefferson College, Philadelphia, where the genius of a CHEVALIER JACKSON has brought its technique to a high level of exactitude. In his Lumleian lectures, delivered before the Royal College of Physicians of London two years ago, one of Prof. JACKSON'S colleagues, Prof. THOMAS MCCRAE, told the story of the bronchoscopic clinic associated with the University Hospital in Philadelphia as seen by the physician attached to it. In a series of 1300 cases of foreign body in the bronchus JACKSON, we learn, did not fail once to remove the body by means of the bronchoscope, usually within a few seconds. This exploit was brought home graphically to the medical profession in this country by Prof. MCCRAE'S illustrations of the varied foreign bodies removed in this way. These pictures, which were reproduced in our columns [1] at the time, showed dental plates and instruments of various kinds found impacted in the air-tubes, numberless safety-pins removed from trachea and bronchi, tacks and staples retrieved from all parts of the bronchial tree, a variety of toys, of which the larger sorts had lodged in the œsophagus, and a wonderful collection of seeds and shells which had found a nidus in some part of the respiratory tract. The inhaled objects of vegetable origin had a certain local colour, for in 100 consecutive cases a pea-nut or a portion of one was found in 45, a grain of maize in 17, and a water-melon seed in 15. Prof. MCCRAE'S lectures dealt in detail with the signs and symptoms produced by foreign bodies so introduced, with the diagnosis which was often only made after radiological examination, and quite briefly with the treatment. We are now able to publish a description from Prof. JACKSON'S pen (see p. 924) of the technique used at the bronchoscopic clinic.

One of the outstanding features of this clinic is the team of perfectly trained assistants of which, as Prof. JACKSON says, "every member is drilled for months in the steps" of the routine of endoscopic procedure; as a result, in easy and in difficult cases alike, the necessary manipulations are performed as though by clockwork. Doubtless the number of cases dealt with at the clinic, and the consequent opportunities for practice, are far greater than fall to the lot of any institution in this country. This is partly due to geographical conditions, partly to the pea-nut habit—and it may be noted in this connexion that the majority of foreign-body cases occur in babies—but largely, no doubt, to the reputation which Prof. JACKSON and his clinic have acquired. Where the opportunities are less, such a high degree of perfection is unattainable; and it is difficult to see how an approach to this perfection can be made in a London hospital, with its frequent changes of house surgeons and clinical assistants. Nevertheless, a careful study of Prof. JACKSON'S methods must be of great value to any endoscopist, particularly in the matter of the "Boyce position" for the patient, and of the duties and attitude of the first assistant. A further point of great interest is the question of anæsthesia; at the Philadelphia clinic general anæsthesia is not used for any endoscopic procedure, the chief reason being that "it is dangerous in certain cases and needless in any case." Cocaine is used in adults for direct laryngoscopy and for bronchoscopy, but not for œsophagoscopy, and not at all in children; morphia is usually given before a first bronchoscopy, and is sometimes combined with atropine or hyoscine. It is well known that the œsophagus is almost insensitive; the bronchial tree is now shown to be less sensitive than has been supposed. and doubtless the endoscopist might dispense with anæsthesia more often in this country. But the temperament of patients is a very variable factor; in nervous cases, with throats rendered irritable by tobacco and alcohol, it is sometimes difficult to make an adequate examination even of the tonsils We all know the spoilt, undisciplined, frightened child of 7 or 8 years old, in whom the simplest examination is very troublesome, and it is hard to understand how such a child is persuaded to submit quietly to bronchoscopy without the use of any form of anæsthesia. The highly perfected team-work of the Philadelphia clinic doubtless makes for great dexterity, but the American, as a race, is not more phlegmatic than the Briton, and it is probable that the occasional bronchoscopist will still have to resort to general anæsthesia, at any rate, for his more nervous and irritable subjects.

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[1] THE LANCET, 1924, i., 737.

## THE ARCH OF THE FOOT.

ALTHOUGH the various forms of pes cavus and claw-foot are common enough in England and are in general adequately treated, not much has been written about them in this country. In some of the largest and best known works on orthopædic surgery in our language the subject is dismissed without much consideration of details, as though its importance were small or its cure easy by obvious methods Yet this deformity often gives rise to grave disability and pain, and shows itself most obstinately defiant of many attempts at cure. In considering pes cavus, as to a lesser degree in considering flat-foot, we are met at the outset with the difficulty of defining the normal arch of the foot. At the two ends of the scale of severity it is easy enough to distinguish flat-foot and pes cavus respectively, but the further we go from the extremes the more difficult does definition become. Races of men and individuals differ very widely in the shape of their foot-soles; the aristocratic foot "under which a mouse could run" on the one hand, and the foot with an almost non-existent arch on the other, may both be perfectly good feet from a functional point of view, and give no trouble to their owners Some years ago an attempt was made at a large New England hospital to forecast the future of the feet of some hundreds of nursing probationers The result was disappointing, for the observers failed to find any constant relation between defects detected on entry and subsequent breakdowns in training in the wards of the hospital. In severe and advanced cases, where radical operations on the bones are justifiable, treatment may no doubt be simple if severe But in the vast majority of cases in which such mutilating procedures cannot be justified, the cure is often uncertain and the treatment is nearly always tedious. Dr. Hackenbroch[1] describes and discusses the pathological anatomy of the different grades of deformity and their operative treatment, ranging from fasciotomy to tarsectomy, not omitting the various tendon-transfer operations which have found favour with some surgeons. In something like 30,000 words and with the help of 40 illustrations he has given us a very full account of the subject, and one which should be of practical use to all surgeons who may be in doubt as to the best means of treating this deformity, for in this monograph they may find recorded most, if not all, of the procedures that have been devised for its relief.

# Annotations.

"Ne quid nimis."

## THE MAUDSLEY HOSPITAL.

PSYCHIATRY, which among primitive peoples is the earliest and most important branch of medicine, is, in civilised countries, only just coming into its own. In the middle of the last century many great physicians recognised that the mind had its diseases, and gave themselves to its study; then came a sudden expansion of interest in pathology and a dark period during which men declined to believe in the reality of diseases for which they could find no physical cause. From this attack of "parallelism" the science of mental disease is just rallying. Although it has not yet reached the position it deserves, it has attracted some of the greatest minds in medicine, and is subduing the forces of pathology to its own ends. It was only to be expected that the swing of the pendulum would bring uppermost the opposite view, that all disease, physical and mental, is the result of mental disturbance; the schools of psychology have increased and multiplied, and signs are not wanting of a tendency to neglect the demonstrable facts of biology and to introduce into the study of mental disease an element of ingenious psychological speculation that, while affording great satisfaction to its exponents, is not likely to contribute much help to the clinician, who is, after all, the person who matters most. Against this danger the Maudsley Hospital is a valuable defence. Those who direct its policy are not only psychiatrists of experience and skill, but they have a deep respect for hard work and patient research in pathology, biology, and chemistry. The essence of their attitude is that mind and body are one, that one cannot become disordered without the other, and that the only way to a full understanding of the secrets of mental disease is the proof, step by step, of the accompanying physical changes. Everyone knows in what a chaos the science of psychiatry is to-day; each author has his own classification and his own explanation of its problems, and nearly everything is empirical. But clinical certainty can only be built on a basis of pathological proof, and the workers in the well-equipped modern laboratories of the Maudsley Hospital have every chance of building the foundations of a scientific psychiatry. Their work on metabolism, vaso-motor reactions, hydrogen-ion concentration, and many other subjects is well known, and they are fortunate also in being connected with a hospital where the nurses are enthusiastic enough to give up their time and comfort to act as controls, and where the medical officers add to their heavy routine work by collaborating in or initiating research work.

It is regrettable that the issue of the report of the Maudsley Hospital, in common with many other official publications, is so tardy. The booklet just published only takes the history of the institution up to Jan. 31st, 1925, and the work reported is already out of date It serves to remind us, however, that this important experiment of the London County Council is fulfilling the hopes of those who conceived it and achieving its objects of facilitating research and teaching in psychological medicine and providing treatment for voluntary patients suffering from mental disorders of all degrees of severity. During its second year 1304 patients were treated, an increase of 300 over the number in 1923. The preponderance of female applicants for admission was so unexpectedly large that the accommodation had to be rearranged, until finally 96 out of the 144 beds were allotted to women. The hospital's policy of admitting mild, severe, and psychophysical cases together has met with a good deal of criticism, but the results have justified the innovation. The Maudsley has ample facilities for treating cases of slight mental disturbance accompanying such physical conditions as exophthalmic goitre and chorea, for it has the advantage of the coöperation of the consulting staff of King's

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[1] Der Hohlfuss. Seine Entstehung und Behandlung Von Dr M Hackenbroch, Privatdocent, Oberarzt der Orthopädischen Klinik, Köln. Mit 40 Abbildungen. Berlin Julius Springer 1926 Pp 83. G.M.6 60

College Hospital. Moreover, in the present empirical state of psychiatric science, it is of the first importance to study those mental conditions that have a well-defined pathological basis, if the pathology of those which are as yet little understood is ever to be made clear. To make the Maudsley a clinic for mild cases only would defeat its end of furthering the study of mental disease as a whole, and would deprive it of a unique and valuable characteristic. The work of the out-patient department has increased considerably since the beginning of 1924, and the now insufficient accommodation is to be extended. The medical superintendent feels that the future success of the department will depend on an adequate supply of experienced clinical assistants, who will see most of the cases and leave the senior medical officers free to see new patients and those whose disposal is still uncertain. For chronic cases out-patient treatment can be only palliative, but it is none the less valuable in enabling many to "carry on" who would collapse without the periodic encouragement of "therapeutic conversation" and a little bromide, and it is actually preferable for watching and stimulating neurotics, who might drift into an asylum to shirk their difficulties. The arrangements for treating in-patients are exemplary. It is possible to keep three-fifths of the acute cases in bed in the open air in all weather, and when two bridges are covered in this accommodation will be increased. Massage, remedial exercises, and electrotherapy are extensively used. A special "occupations officer" attends three afternoons a week to instruct patients in a large number of handicrafts, at which many display great skill. Practically all the patients who are up do some gardening, clerical work, or tasks in the wards. Singing and dancing classes, entertainments arranged by the patients themselves, parties and picnics keep the patients cheerful and happy. The consultant staff includes a general surgeon, an ophthalmic surgeon, a gynæcologist, a surgeon for diseases of the ear, nose, and throat, and a dental surgeon.

The steadily increasing waiting list and the results of the treatment are sufficient proof of the need for other hospitals such as this. Systematic investigation into after-histories is carried out three months after discharge and then annually, and these statistics will become valuable material later on. The medical superintendent remarks on the party held last January of about 100 ex-patients, and the almost incredible contrast between the health of the guests then and the memory of what it had been at their worst when they were patients. The most urgent need now is for an associated convalescent home where recovering cases can be treated less expensively under the same general supervision.

## THE QUARTERLY REVIEW OF BIOLOGY.

THERE are, says Prof. Raymond Pearl in the preface to the first number of this new paper, about 25,000 reputable scientific journals in the world to-day, and the promoters of *Biological Abstracts* judge that they will deal with some 4000 journals devoted to their sections of natural knowledge. It sounds almost hopeless to expect that more than a fraction of these printed researches will ever be assimilated, brought into their proper relationships, and made adequate use of. It seems as if we need a group of students who will forswear the fun of exploration for laborious lives of reading, contemplation, and synthesis. Till Mr. Rockefeller endows the appropriate colleges we must get what help we can from such papers as *Physiological Reviews*, *Science Progress*, *Nature*, and the present specialised biological quarterly. Biology moves fast nowadays, and it is of real importance that medical men should have such means as can be provided for keeping themselves aware of what is being done; for medicine is a branch of biology, it has much to receive from general biology, and it has much to contribute from its own unique experience; man is studied on a far greater scale and in much more detail than any other animal. We welcome, therefore, this attempt to make some of the modern developments of biology available for the ordinary reader. It is edited by Prof. Raymond Pearl and R. W. Hegner, of Johns Hopkins University, the form is tolerably agreeable, and the difficulty of reading the long lines of a quarto page is obviated by printing in double columns. The articles in this number deal with the mammalian testis and scrotum, symbiosis among animals, especially termites, experimental morphogenesis of the nervous system, the influence of the length of daylight on the growth of plants, recent work on the amœba and adaptation; there are as well notices of recent biological books.

## HERPETOMONIASIS.

STUDIES [1] carried out by Dr. Jaroslav J. Drbohlav in the Department of Comparative Pathology at the Harvard Medical School serve to clear further the ground for the consideration of the probable, and peculiar, rôle of *Phlebotomus* species in the transmission of human leishmaniasis. Wenyon, investigating Oriental sore in Bagdad in 1910, found a herpetomonad in a *Phlebotomus*, and recent work by others has, at least, gravely implicated this fly as the vector of kala-azar and Oriental sore. Laveran and Franchini (1913–20) reported the successful inoculation of certain insect and plant flagellates into laboratory animals. They concluded that a relationship existed between the herpetomonads of insects and leishmaniasis. Fantham and Porter (1914–15) from their own experiments went further in claiming that leishmaniasis is herpetomoniasis of almost general insect origin, and especially that canine kala-azar is herpetomoniasis due to *Herpetomonas ctenocephali*, a flagellate occurring in the dog-flea. This flea was claimed by Basile (1912) to be the specific host of *Leishmania infantum*. About 115 species of herpetomonads have been reported, 96 of them in insects and arachnids. If the conclusions of Fantham and Porter be accepted, then flagellates from various insects should produce infections in mammals similar to, if not identical with, the leishmaniasis that occurs spontaneously. A considerable number of other investigators experimenting with the same species of flagellates, injecting them in the same way into the same or other similar species of animals, obtained negative results. The results of Drbohlav's work are in entire agreement with these investigators—viz., Wenyon, Novy, Macneal, Torrey, Bruce, Chatton, Delanoe, Rodhain, Pons, V. d. Branden Bequaert, Nöller, Tyzzer, Walker, Patton, Sundara Rao, Glaser, and Becker.

Inoculation of *Herpetomonas ctenocephali* of the dog-flea, from both old and freshly isolated cultures, into warm- and cold-blooded animals was invariably unsuccessful in Dr. Drbohlav's hands. The parasites rapidly degenerated and diminished in number, few could be found after six hours, and none after 24 hours. Up to three hours the parasites could usually be recovered in culture. Crithidia from the water strider, *Gerris remigis*, inoculated into mice, rats, and frogs gave negative results. The inoculated flagellates disappeared in six hours. *Herpetomonas muscarum* from the gut of *Lucilia* genus, and from freshly isolated cultures, inoculated into mice, rats, and frogs, and the same monkey as that used for (unsuccessful) inoculation of flea flagellates, produced no infection. Several species of plants of genus *Euphorbia* and a species of *Asclepias* were all found free from flagellates. In hanging-drop preparations from these Euphorbiaceæ inoculated with *Herpetomonas ctenocephali*, *H. muscarum*, *Leishmania infantum*, and *Trypanosoma rotatorium* motile forms were present after five days; but there was no multiplication and all forms degenerated and were dead after six days. The Euphorbiæ were inoculated with different cultures of herpetomonad flagellates, but no forms were found in the latex. In no animal or plant inoculated was there any sign of multiplication of the above flagellates; in fact these decreased in number and vanished after a few hours. The positive results reported by others may be explained by a confusion of natural infections with the inoculated, especially since proof such as might be obtained by the isolation in culture of the flagellate inoculated is lacking. Drbohlav's experiments indicate no ætiological relationship between *H. ctenocephali*, *H. muscarum*, *Crithidia gerridis*, and leishmaniasis, thus confirming the results obtained by American and most European investigators.

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[1] Studies on the Relation of Insect Herpetomonad and *Crithidial Flagellates to Leishmaniasis*, Amer. Jour. of Hygiene, vol. v., No. 5, September, 1925.

Whether a single herpetomonad species may be widely distributed among different species and genera of insect hosts is another question which Dr. Drbohlav set himself to answer, using for this purpose pure cultures and the method of cross infection. His experiments show that fleas may be artificially infected with their natural parasite, *H. ctenocephali*, but not with *L. infantum* (thus disproving Basile's contention), *H. muscarum*, or *C. gerridis*. Larvæ of *Ctenocephalus canis* were artificially infected by feeding them with fæces of infected fleas and with cultures of *H. ctenocephali*. Since such infected larvæ remained infected throughout the larval, pupal, and adult stages, it is probable that the natural infection of fleas is acquired in the larval stage by feeding on infected fæces of adult fleas, and not in the adult stage when only animal blood is taken as food. Attempts to infect flagellate-free *Gerris remigis* with *H. ctenocephali*, *L. infantum*, and *C. gerridis* failed. Cross infection experiments with cultures of *H. muscarum* on certain species of the genera *Musca*, *Fannia*, and *Lucilia* gave positive results, all of these species serving as suitable hosts. The flagellates described as different species from these various flies represent therefore one and the same organism, *Herpetomonas muscarum*.

## IRON THERAPY IN INFANTS.

THE efficacy of iron in the treatment of infants has been the subject of frequent dispute, and reference to the literature reveals considerable conflict of opinion, apparent or real. American authors have in recent years been almost unanimous in regarding iron as useless in the treatment of infantile anæmias. The basis of this opinion has in most cases been the result yielded by animal experiment. Dr. Murray Bass and Dr. Bernard Denzer[1] have approached the question from a standpoint which required an ætiological classification of the anæmias before passing judgment on the value of iron. Adopting the continental classification into constitutional, alimentary, and infective anæmias, they draw attention to the different way in which these forms respond to the ingestion of iron, and admit that the third type is not improved by it. The constitutional anæmias include those found in premature infants and twins, and are due to a deficiency of the "iron depôt" posited by Bunge. The alimentary anæmias result from unduly prolonged feeding on milk alone, and consequent exhaustion of the iron depôt. Both these types were found to benefit immediately and unequivocally from the administration of inorganic iron. Some interesting and very convincing case-histories are given as illustrations of the improvement obtained, particularly those of two twins of 1 year who were suffering from severe anæmia of chlorotic type with practically identical blood-pictures. One of them was treated with iron and the other used as a control, their diets being identical. The hæmoglobin percentage of the first rose steadily from 30 to 60 per cent. in six weeks; that of the control remained stationary until transfusion was performed as a necessary life-saving measure. Doubt has been expressed as to the infant's power of absorbing inorganic iron. Experiments referred to in this paper suggest that the administration of iron to a child who is fed exclusively on milk does not bring about an increase of hæmoglobin, but that it will do so if vegetable extract is added to the diet; the fault is not in the absorption of the iron, but in the synthesis of the hæmatin portion of the hæmoglobin.

The views which we have quoted are held by many observers in Europe, especially in France. To a certain extent the conflict of opinion between them and the majority of American authors is more apparent than real. The statement that the great majority of anæmic infants do not benefit by iron is true, because the great majority of them belong to the class in which the anæmia is a symptom or sequela of some infection. In this country there is probably no pediatrist who will decry the use of iron in a primary anæmia of the chlorotic type, but there is a notable divergence of opinion on the frequency of their incidence. It is likely that the comparative infrequency of prolonged breast-feeding in this country may affect the question. There can be little doubt that suitable solutions of inorganic iron are absorbed by the infant's intestinal tract, but it is a common experience that they set up an irritation of that tract, with resulting dyspepsia and anorexia. That this is due to the absorption and not to the excretion of the metal is rendered likely by the fact that these symptoms usually disappear when oral administration is replaced by intramuscular injection. Some excellent preparations intended for the latter method are obtainable, and have added considerably to the applicability of iron therapy.

## THE ATTACHMENT OF THE EXTRA LIMB.

Samuel Butler rightly pointed out that a spade, a typewriter, and a locomotive could be regarded as detachable and artificial limbs. As such they come within the province of medicine, for an inefficient joint or contact between an operator and his machine may affect his health and his efficiency just as much as a diseased articulation between two bones. The efficiency or otherwise of industrial methods may not be the direct concern of medicine, but it is its concern to diminish the damage done by asymmetrical and dysharmonious effort. Physiology is the study of the mechanism of the normal vital processes and the way in which they react to environmental change, and it offers information on the conditions under which work can be done efficiently. It is very desirable that this information shall reach those who have to preserve and increase the health of the public, and that it should be applied in industry. We welcome, therefore, the announcement of a course of lectures, by Prof. R. J. S. McDowall, designed to meet the needs of candidates for the D.P.H., on Physiology as Applied to Hygiene, which was recently announced as beginning on May 7th (vide THE LANCET, April 17th, p. 837). The Industrial Fatigue Research Board and the related scientific committees of the Medical Research Council continue to produce a steady flow of really useful information on the attainment of efficiency. The results already obtained on the comparative physiological cost of muscular work carried out at different speeds and of variations in the position of the load carried, on the influence of rest pauses, and of changes of posture on the capacity for muscular work, and on the extent and effects of variety in repetitive work, are the groundwork of industrial physiology—the groundwork of an immensely important science. It ought to be familiar to hygienists, and it ought to be continued. Only last week an interesting publication was issued by the Board describing an investigation by two engineers, Mr. L. A. Legros and Mr. H. C. Weston, into the Design of Machinery in Relation to the Operator.[1] As an introduction to the report they describe the evolution of the bicycle from a hobby-horse of 1818 to the relatively efficient machine of to-day. In 1840 McMillan fitted a crank-drive to the two-wheeled frame—he combined machine and rider in one mechanism. But the bone-shaker, in use in the 'sixties, necessitated a cramped position for the body and caused suffering to the rider by vibration and jolting on its solid metal tyres, and gradually it had to be modified and improved. At first the modification was mechanical, so as to obtain high efficiency; then it was psychological, so as to reduce the risk of falling and difficulty of balance; and finally it was physiological, so as to reduce vibration and enable the force exerted by the rider to be more efficiently applied. The bicycle, as they point out, has had the advantage of being tested in races, and its effect in producing fatigue has been severely tried. Industrial machines do not receive these direct tests, and it is not unusual for inefficient clumsy models to be reproduced (like inaccurate literary references) through many generations. The evolution of many varieties, moreover, has been impeded by too slavishly copying manual movement. This report does not, perhaps, specially concern medical men except in so far as it illustrates a principle; but the specific improvements which it suggests in various types of machine—notably of those in the laundry and leather-work trades—will be of such help to manufacturers that they will certainly ask for more.

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[1] Jour. Amer. Med. Assoc., March 27th, 1926.

[1] H.M. Stationery Office. Pp. 34. 1s. 3d.

## GLAND-GRAFTING.

GRAFTING of glands is still on its trial. The experiments of Steinach, Voronoff, and others gave ground for hope that a new weapon against hitherto unconquerable diseases was to be placed in our hands. But grafting soon revealed itself as very uncertain. The proportion of grafts that take is not large, and the laws that govern a graft's chance of survival are still imperfectly understood. The vitality even of a slip that seems to have taken hold is open to dispute, and the slip itself always seems to disappear after a short time. No proof has indeed been offered that a graft ever acquires cellular activity of its own, or that its virtue is appreciably greater than so much glandular tissue introduced into the alimentary canal. This being so, the report of Dr. Frugoni and Dr. Scinone, of Florence,[1] on a case of chronic tetanus treated by a graft of human parathyroid into the tunica vaginalis, after the method described by Voronoff, is worth study. No one case can prove a theory or establish a method, but this success will encourage other investigators to take heart. Undoubtedly many experiments which have failed through a bad choice of site for the graft would, if repeated on the lines indicated, give more decisive results.

The patient was 21 years old, electrician by trade, a very heavy smoker. Family history good. At 16, after a heavy meal of plums, he had an attack of acute gastro-enteritis accompanied by a typical tetanic attack—"obstetrical" hands, painful rigidity of the arms with the forearm flexed and the upper arm pressed against the trunk, spasmodic rigidity of the lower limbs, abdominal contraction, difficulty in breathing, opisthotonos, diplopia, and lockjaw. This attack lasted three days; psychic and sensory function remained normal. After five months he had another and thereafter further attacks, at diminishing intervals, up to four in a single night. Between the attacks he sometimes lost consciousness and fell. His constitution was robust, but his general condition was not good; panniculus poor and mucosæ pale. Pulse and respiration regular and intelligence normal; but disposition impulsive and restless. He had a slight exophthalmos, a weak conjunctival reflex, and nystagmus on glancing sideways, with strabismus due to spasm of the internal rectus. Chvostek's sign was well marked; percussion of the facial muscles or of the sterno-mastoids, especially at their insertion, and of the abdominal muscles, would produce lively contraction. Trousseau's sign was actively present. The sign of Lasègue was absent, but if the extended leg were flexed on the pelvis severe cramp overtook all its muscles, especially those of the foot, which showed a hollow sole with the great toe in violent flexion. The attacks were sometimes accompanied by genuine epileptic seizures, with loss of consciousness. The effect of calcium chloride injections was transitory and the most intensive antisyphilitic remedies gave no result. The cause of the deficiency was probably a specific syphilitic lesion. An active gumma or arteritis would hardly have taken so long to produce the effects, nor would it have been so intractable to the ordinary remedies. The operation followed the technique of Voronoff. Under novocaine anæsthesia an incision 7 cm. long was made in the tunica vaginalis, the testicle withdrawn, and the graft fixed on its medial side in the cul-de-sac near the epididymis, fine catgut being used and drawn, not through the glandular tissue, but through the fringe of fat and connective tissue surrounding the gland.

When the operation was performed the patient was undergoing six or seven long and extremely painful attacks every day. The graft effected on June 11th had an almost instantaneous effect. On the next day but one following it took three minutes to provoke the Trousseau sign, which hitherto had appeared at once; two days later the leg would not cramp under flexure and Trousseau's sign had disappeared. It came back from June 16th to 25th, and then vanished for good. Chvostek's sign, although much less conspicuous, was still present up to the date of the report, showing that a slight parathyroid deficiency remained which the graft had not succeeded in compensating. Others have noted this persistence. Meanwhile the patient, released from his pain, picked up amazingly. Excitability tests, taken after 15 to 25 days, showed that while the state of the facial muscles was unaltered, the threshold for those of the arm was considerably raised. Most important of all, the ingrafted gland was felt on palpation firmly attached to the testicle, and at the end of five months it had lost nothing of its volume. Much of the interest of the case depends on how long the graft will survive, but it has served to prove the connexion between chronic tetany and parathyroid deficiency and to demonstrate the advantage of Voronoff's innovation. Even if the hopes of the authors are destroyed by the ultimate disappearance of this, as of most grafts, they have at any rate made a substantial contribution to the resources of gland therapy.

## A REVISED VIEW OF PANCREATIC SECRETION.

ACCORDING to Bayliss and Starling the hormone called secretin which stimulates the pancreas to activity is derived, by the action of acid, from a precursor called prosecretin and therefore exists only in that part of the small intestine where there is acid to promote the change. It is supposed that when the acid contents of the stomach pass into the duodenum they act at once upon the prosecretin present in the walls to form secretin; this is absorbed into the circulation and thus is carried to the pancreas. If this view is correct it is clear that the secretion of pancreatic juice depends to a large extent on the production of hydrochloric acid by the gastric mucosa; but an account of recent investigations of J. Mellanby and A. St. G. Huggett, published in the *Journal of Physiology* (1926, lx., 25), suggests that this explanation does not altogether fit the facts. These workers began by determining the distribution of prosecretin in the alimentary canal, making an extract from the mucous membrane with 0·2 per cent. hydrochloric acid as recommended by Bayliss and Starling. They discovered, however, that hydrochloric acid has no specific capacity for the preparation of secretin extracts from the alkaline mucosa and found that dilute alcohol is in fact much more effective for the purpose than acid. They claim, moreover, that their experiments prove the presence of considerable quantities of pre-formed secretin in the mucous membrane of the upper two-thirds of the small intestine; a relatively small quantity may also be extracted from the lowest third. The secretin contained in the mucous membrane is, they state, soluble in water and is relatively stable in dilute solution of acid or alkali, alcohol, and acetone. It may therefore be obtained by extracting the mucous membrane of the upper two-thirds of the small intestine with water, 0·2 per cent. NaOH, phosphate solutions (pH 7·5, 6·5), 0·2 per cent. hydrochloric acid, 75 per cent. alcohol or 75 per cent. acetone. There is no evidence, they consider, that gastric hydrochloric acid converts a precursor (prosecretin) present in the duodenal mucous membrane into *secretin and thus excites a flow of pancreatic juice,* as was suggested by Bayliss and Starling. Secretin, they remark, possesses all the properties of a secondary albumose, being soluble in water, precipitated on full saturation with $Am_2SO_4$ and destroyed by pepsin, trypsin, and the intracellular enzymes of the small intestine. It is not derived from the alimentary digestion of protein, since it is present in considerable quantities in the small intestine of the fœtus. In conclusion, they find no evidence that the chemical group to which secretin owes its activity is of the nature of a primary amine.

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[1] Presse Médicale, March 20th, 1926.

## THE FUNCTION OF AURAL CERUMEN.

THE function and purpose in nature of the cerumen secreted by the external auditory canal is a subject which has not attracted much attention from experts. In a recent issue of the *Journal of Laryngology and Otology* (April, 1926), Dr. E. ff. Creed and Mr. V. E. Negus contribute the results of some investigations they have made. Of 60 individuals examined, only five had no cerumen, and all of these had healthy ears. Neither age nor the width of the meatus had any definite effect on the amount, consistence, or colour of the wax; but the tendency was for the quantity to be smaller in the female sex. A bacteriological examination of the cerumen from 49 specimens was made, and in only two cases was there no growth; staphylococci, moulds, and diphtheroid bacilli were the most frequently found organisms. The writers come to the conclusion that cerumen is most decidedly not bactericidal; on the contrary, it serves as a medium in which organisms of great variety may multiply. They suggest that it has no important function in man, and that the only useful function it can *serve is to prevent mechanically* the entrance of such things as dust and insects to the deep meatus. There is, we think, another useful function. As well as making people deaf by occlusion of the meatus, and being a source of trouble, if also of emoluments, to doctors and aurists, is it not possible that it is of service in aiding the removal of shed epithelial débris from the auditory canal? The external auditory meatus is the only example in the body of a deep narrow cavity lined by ordinary skin, which is constantly shedding its outer layers. On the surface the shed flakes are removed imperceptibly, but in the meatus the cerumen forms a lubricant which adds bulk to the desquamation and assists its discharge. In the great majority of cases it performs this function admirably, and the wax comes away in frequent small quantities, which are almost unnoticed. But it is necessary that its consistence should be correct; if it is too stiff it collects and may in time occlude the meatus. Accumulations of shed epithelium in the meatus are not infrequent and are far more troublesome than collections of wax; they may be due, in part at least, to the absence of the secretion.

## THE BOXER INDEMNITY AND PUBLIC HEALTH.

THE funds due under the Boxer Indemnity are to be allocated by the Powers to undertakings for the benefit of China. An earnest appeal to the British Government has been issued by two representative leaders of Chinese medicine, Dr. S. M. Howe and Dr. W. L. New, who suggest that a portion of the sum to be remitted by Great Britain shall be devoted to public health work. The Americans, they remark, have encouraged higher education amongst the Chinese; the French have used their funds partly for financial stabilisation and partly for education; the Dutch have begun a conservancy scheme on the Yellow River; the Japanese intend to spend the money on an Oriental library and research laboratory. As yet the British Government has come to no decision, though a Commission has been appointed. What could be more appropriate, it is suggested, than that Britain should give to China "that part of its culture in which it leads the world"? Modern *industrialism and rapid transport took their origin in* England. The sanitary evils which they brought in their train first appeared in this country, and naturally the British became the pioneers of health legislation. This position they have maintained, but unfortunately, in other lands, the antidote is slow in following the poison. In China industry and communications are making headway, and there has, of course, always been a crying need for hygiene and sanitation. We publish on page 946 some account of the present situation, and it is satisfactory to note the rising standard of medical education. But public health work in China is still hardly more than sporadic, and the tasks to be faced are stupendous. Dr. Howe and Dr. New, who speak for the two principal medical organisations of China, suggest that as an initial step a Public Health Commission should be set up. According to their proposal this would involve the use of £100,000 per annum, which is less than a quarter of the sum to be remitted by the British Government. The function of the Commission would be to encourage the attempts of provincial and local city governments to inaugurate health measures, and to give them technical direction. In the past little result has followed municipal schemes because the officials have had a wrong outlook on public health and because there has been a lack of funds and coördination of the existing facilities. Certainly even a relatively small sum, judiciously expended, has been known to act as catalyst in a large public health movement. A Commission could secure the local appropriation of funds by offering partial support over an initial period of years and could lend out medical personnel while local officials were being trained abroad. On these lines, it is clear, much good might be done. "We are confident," *says the appeal,* "that no other expenditure on such a small scale could be made to affect within a decade the welfare of as many persons as the plan proposed." Plague, cholera, small-pox, and typhus cause appalling havoc in China, and their control can only be hoped for if schemes of preventive medicine are begun.

MR. Guy Capper Birt, M.R.C.S., L.R.C.P. Lond., L.D.S., has been appointed surgeon-dentist to His Majesty the King, in the room of Sir Harry Baldwin, C.V.O., who has been appointed honorary surgeon-dentist to His Majesty.

BY an Order of the Committee of Privy Council, Lieut.-General Sir William B. Leishman, Director General, Army Medical Services, has been appointed a member of the Medical Research Council. The vacancy thus filled was consequent upon the recent approval of amendments to the Royal Charter of the Medical Research Council, which provide, inter alia, for an increase in the number of members from 10 to 11. Under the amended Charter, two of the eight scientific members will retire in each year, and one of the three other members in each second year, the scientific members being not eligible for reappointment before the end of one year after retirement.

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WILLIAM NICHOLLS CONVALESCENT HOME.—A convalescent home in connexion with Cardiff Royal Infirmary was opened on April 24th by Lady Nicholls, the wife of the donor. The house, formerly known as Ty-to-Maen, was built by the late Mr. Richard Allen, and his nephew, Sir William Edgar Nicholls, has presented it to the Infirmary as a memorial to his uncle. Thirty-five convalescent patients are already installed in the home, which has beautiful grounds. It is situated at St. Mellons, about midway between Cardiff and Newport. Lady Nicholls has presented a wireless installation for the use of the patients in the home. Among the speakers at the opening ceremony, which was largely attended, was Sir Ewen Maclean. He drew attention to the urgent need for more hospital beds in Wales, where there were only two general hospital beds to every 1000 of the population.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXXI.—THE TREATMENT OF DIABETES.

### I. DIETETIC TREATMENT.*

THE aim of treatment of a patient with diabetes mellitus, whether dietetic measures alone are used or whether insulin therapy is added, is to contrive that the blood-sugar before breakfast is within the normal limits of 0·08 to 0·13 per cent.; that it does not exceed 0·18 per cent. at any time of the day, and is not raised above 0·15 per cent. for more than two hours after a meal. The proportion of carbohydrate, protein, and fat should be such that either no acetone bodies or only minimal amounts appear in the urine. The caloric value of the diet should be sufficient to enable the patient to maintain his weight, lead his ordinary life, and, if a child, to grow and develop properly. The urine which is passed after the evening meal should be tested for sugar. Benedict's qualitative solution should be used in preference to Fehling's solution as it is easier for the patient to learn. The general health of the patient must be cared for and minor complications, such as constipation and any form of focal sepsis, must receive the appropriate treatment.

### *Dietetic Measures.*

The normal diet may be altered in either of two ways: (1) by a reduction in its caloric value to about one half the normal amount and a careful balancing of the carbohydrate and fat to prevent ketosis—the so-called maintenance diet; (2) by ordering a short fast, to be followed by a rapid increase in the diet to the same level as the maintenance diet—the ladder diet. Both methods have their adherents and merit discussion.

### *The Maintenance Diet.*

The maintenance diet was introduced in America as a reaction from prolonged fasts and severe undernutrition and partly to prevent any ketosis. It is useful in dealing with patients who have already been under treatment for diabetes. In the hands of physicians specially experienced in the management of diabetic patients it gives excellent results even in new cases, though for the reasons set out below I personally prefer the ladder diet for these.

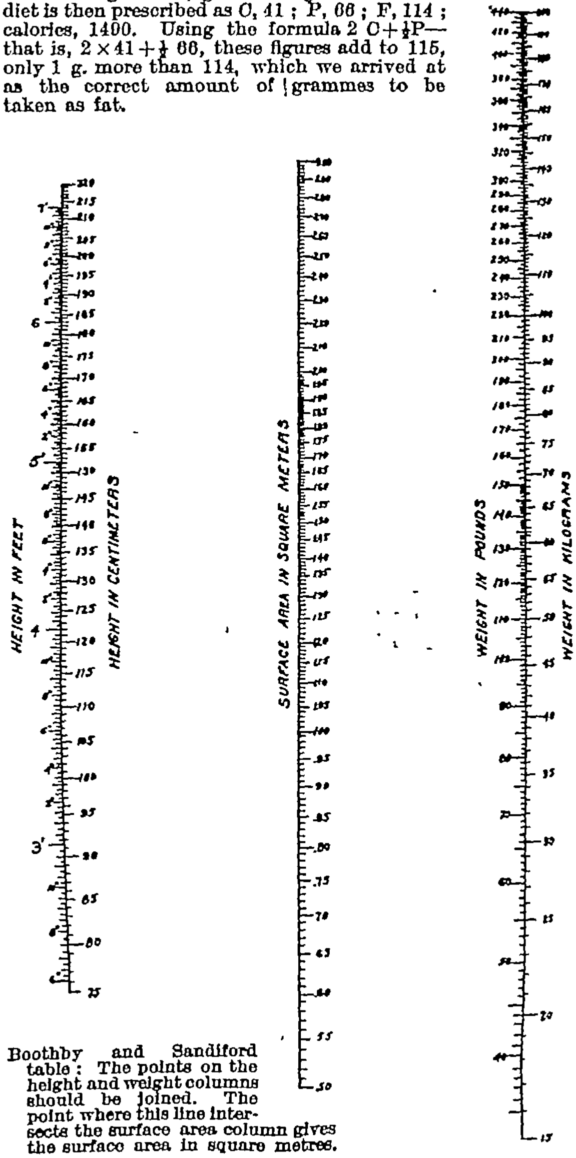
In order to construct the maintenance diet certain calculations are necessary.

The patient's body-weight and height are ascertained, and using the Boothby and Sandiford table (see figure) the surface of the body in square metres is read off. Example: Height, 63 in.; weight, 132 lb.; surface area, 1·62 sq. metres. If the patient is a male aged 40, the calories required for the metabolism, while at rest in bed, are read off from the Aub-Du Bois table. In this case it is 924 per sq. metre, or 1497 per 1·62 sq. metre. This amounts to 11·3 cals. per pound. If this calculation is impossible an approximate result can be obtained by multiplying the patient's weight—132 lb.—by 11·3 = 1492. In our example the result is practically identical, and although this is not always the case the error will never be very great.

In order that the diet may be correctly balanced it must fulfil the following conditions. The number of grammes of fat must equal the sum of twice the number of grammes of carbohydrate and half the number of grammes of protein. This is best expressed as an equation. $F = 2\,C + \frac{1}{2}\,P$.

The caloric value to be given—in this case 1490—is then divided between the carbohydrate, protein, and fat in the following way.

For an adult ½ g. of protein is allowed per 1 lb. of body-weight; in this case the allowance amounts to 66 g. This figure multiplied by 4·1 (caloric value of protein) gives 270 calories from the protein and leaves 1220 for division between the carbohydrate and fat. In order to prevent any ketosis the balance between these two must be carefully struck. If the caloric value (1220) still available is divided by the arbitrary figure 30 the quotient is the amount of carbohydrate to be consumed per day in grammes—in this case 41. This figure multiplied by 4·1 (caloric value of 1 g. carbohydrate) gives 168 calories. 1220 minus 168 leaves 1052 calories for the fat, and this number divided by 9·3 (the caloric value of 1 g. of fat) gives 114 g. of fat. The diet is then prescribed as C, 41; P, 66; F, 114; calories, 1400. Using the formula $2\,C + \frac{1}{2}P$—that is, $2 \times 41 + \frac{1}{2}\,66$, these figures add to 115, only 1 g. more than 114, which we arrived at as the correct amount of grammes to be taken as fat.



Boothby and Sandiford table: The points on the height and weight columns should be joined. The point where this line intersects the surface area column gives the surface area in square metres.

AUB-DU BOIS TABLE.—*Caloric Requirement per Square Metre of Body Surface.*

| Age (years). | Cal. per day. | | Age (years). | Cal. per day. | |
|---|---|---|---|---|---|
| | M. | F. | | M. | F. |
| 10–12 | 1236 | 1200 | 20–30 | 948 | 888 |
| 12–14 | 1200 | 1116 | 30–40 | 948 | 876 |
| 14–16 | 1104 | 1032 | 40–50 | 924 | 864 |
| 16–18 | 1032 | 960 | 50–60 | 900 | 840 |
| 18–20 | 984 | 912 | 60–70 | 876 | 816 |

M. = males. F. = females.

Calculate requirement in children according to weight. Up to—

| | |
|---|---|
| 22 lb. .. .. .. .. .. | 27·5 cal. per lb. |
| 22–33 lb. .. .. .. .. .. | 25·0 „ |
| 33–44 lb. .. .. .. .. .. | 25·0 „ |

The total amount of calories to be consumed in the day—in our hypothetical case, 1400—is divided into four meals of approximately the following amounts: Breakfast: C, 18·5; P, 22; F, 38; calories, 490. Midday: C, 9; P, 15; F, 25; calories, 330. Tea: C, 5; P, 7·5; F, 12; calories, 103. Evening: C, 18·5; P, 22; F, 38; calories, 490.

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* Part II., on the Insulin Treatment of Diabetes, will appear in THE LANCET next week.

### *How to Use this Diet.*

In order to use this diet reference must be made to diet tables such as those of Poulton[1] and Harrison and Lawrence,[2] for it is essential to give variety. Some patients learn to calculate their diet very accurately with these tables, but the majority need another method. A simpler way has been devised by R. D. Lawrence,[3] who has calculated the amounts of protein and fat in the following dishes and made these approximately equivalent to each other by adding different amounts of fat.

The following articles of food contain approximately 7·5 g. protein and 15 g. fat: Bacon, 1 oz. Ham, tongue, or sardines, 1 oz., with ¼ oz. fat. Cheese, ¾ oz., with ¼ oz. fat. One egg or salmon, 1 oz., with ⅜ oz. fat. Lean beef, mutton, lamb, veal, pork, chicken, or liver, 1 oz., with ⅓ oz. fat. Pheasant, grouse, partridge, or rabbit, ¾ oz., with ½ oz. fat. White fish, crab, lobster, 1¼ oz., with ⅝ oz. fat.

In order to know how many of these rations should be eaten in the day the amount of protein to be consumed is divided by 7·5. In the case we have been considering, where the patient was allowed 66 g. of protein, he would get approximately nine rations. Of these, three rations are eaten at breakfast, two at midday, one at tea, and three at the evening meal. The total fat in these nine rations is 135 g., or 20 g. more than is allowed in our example. In order to correct this four-fifths of an ounce of fat must be deducted from the fat ration.

The carbohydrate ration is worked out separately because the daily carbohydrate ration allowed for in the maintenance diet should, in my opinion at least, only be reached by stages. At the outset of treatment, when the patient is still passing sugar, only 20 g. of carbohydrate are given.

5 g. of carbohydrate are contained in approx. 5 oz. of the following vegetables: asparagus, broccoli, cauliflower, brussels sprouts, celery, cucumber, endive, French beans, leeks, lettuce, vegetable marrow, rhubarb, spinach, tomato, sea kale, turnips, Jerusalem artichoke.

5 g. of carbohydrate are contained in: apple, 1 oz.; apricot, 1½ oz.; banana, ¾ oz.; blackberries, 1¾ oz.; black currants, 1¾ oz.; cherries, 2¼ oz.; damsons, 3¼ oz.; gooseberries, 2½ oz.; greengage, 1½ oz.; grape, 1 oz.; grapefruit, 2 oz.; Brazil-nuts, 2¾ oz.; hazel-nuts, 1½ oz.; walnuts, 1½ oz.; oranges, 1¾ oz.; peaches, 8 oz.; pears, 1½ oz.; boiled peas, 1½ oz.; plums, 1½ oz.; raspberries, 1½ oz.; red currants, 1½ oz.; strawberries, 2¼ oz. (Harrison and Lawrence.)

The carbohydrate is kept at this level (20 g.) until the urine is sugar-free and the blood-sugar normal. As soon as this occurs the carbohydrate is increased by 5 g. portions until 40 g. are reached, at which stage there should be no acetone bodies in the urine. If this is not the case the carbohydrate must be again increased. If, on the other hand, the urine does not become sugar-free on 20 g. of carbohydrate per day, insulin treatment is called for.

### *The Ladder Diet.*

The ladder diet is in many ways simpler than the maintenance diet. Moreover, I prefer the principle of the preliminary short fast for the following reasons: (1) Symptoms are relieved at once, and in many cases the blood-sugar falls to normal in two or three days. (2) It has a valuable psychological effect; every addition to the diet is appreciated and a scale of half rations, such as the maintenance diet, which seems meagre except after a fast, is tolerated. A fast day is less tiresome than a half-ration day. (3) The fast day also has a use in that the patient starts the treatment with a period in bed and is more willing to treat his condition seriously. Three to four weeks should be devoted to the preliminary treatment so as to give the beta cells of the islands of Langerhans the best chance of recovery and to enable the patient to learn the details of the new diet and get accustomed to the change. It is suitable without variation for an adult of about 130 lb., but must be somewhat reduced for children and young adults.

On the fast day as much fluid as is desired may be taken—tea, coffee (with no milk or sugar), gravy soup or meat extract, fresh lemonade sweetened with saccharine.

*Diet 2.*—The fast is broken by a modification of the von Noorden egg and vegetable diet. Breakfast: two eggs, ½ oz. butter, 2 oz. of lettuce or tomato, tea or coffee. Midday: one egg, 6 oz. of green vegetables (5 per cent. group), ½ oz. butter, 10 oz. gravy soup. Tea: two eggs, ½ oz. butter, 2 oz. of salad, tea or coffee. Supper: 6 oz. of green vegetables, ½ oz. of butter, 10 oz. of gravy soup. One ounce of cream is taken in the tea and coffee. Carbohydrate, 17·5 g.; protein, 38·5; fat, 58·5; calories, 778. If the patient does not like eggs, an equivalent amount of meat or fish can be substituted, using diet tables.

*Diet 3.*—2 oz. of meat are added to the midday meal: C, 17·5; P, 52·8; F, 72·5; calories, 968.

*Diet 4.*—2 oz. of bacon are added for breakfast and the egg at midday is deducted: C, 17·5; P, 56·6; F, 97; calories, 1208.

*Diet 5.*—3 oz. of ham or other meat or equivalent of fish are added for the evening meal and one egg is deducted: C, 17·5; P, 59·2; F, 112; calories, 1360.

*Diet 6.*—4 oz. of milk are added as desired: C, 24·5; P, 64·3; F, 117; calories, 1450.

*Diet 7.*—5 g. of carbohydrate in the form of fruit are added: C, 29·5; P, 64·3; F, 117; calories, 1470.

If the patient has responded well to the diet the blood-sugar will be normal and the urine will only contain a trace of acetone bodies. If not, then insulin will be required. This level of diet is nearly the same as the maintenance diet, but the carbohydrate allowance is a little lower. The carbohydrate can be cautiously increased each week until it reaches 40 g.

### *Total Amount of Food.*

In both schemes the next step is to determine the total amount of food which the patient needs. Some patients need very little food and gain weight on very low diets; others require a very big increase in the diet before they gain weight. The test of whether the diet is adequate is the weighing machine, and the patient should be weighed each week. If the patient's weight is much below the normal for age and sex the diet must be increased each week by 50 or 100 calories. In order to keep the balance right the increase should be made in the proportion of 12 g. protein to 6 g. fat (½ P = F). If the patient exceeds the normal weight for the age and sex the diet must be decreased. While this is being settled the patient should be instructed how to vary the diet. The carbohydrate ration is best taken in the form of milk, vegetables, and fruit, since the most variety can be obtained in this way. Some patients crave so much for bread that it is necessary to allow some in the form of toast. The protein can be varied by using any kind of meat, fish, cheese, or eggs. Their composition must be worked out approximately from diet tables, but it is unnecessary to be too meticulous in considering whether the meat comes from the undercut or topside of beef. The margin of error in the cooking is so large that these differences need not be considered. The fat can be taken as butter or cream. The real deprivation comes from the lack of an appetising bread substitute to eat with meals. In proportion as the bread substitute contains less starch so it becomes less palatable. Many preparations which are supposed to be suitable for diabetics contain a considerable amount of starch, even up to 40 per cent. No diabetic food should be eaten whose percentage composition is not clearly stated. It is an advantage to have the amounts of C.P.F. set out in terms of 1 oz., as this permits the patient to make the substitutions for meat and eggs easily. The special diabetic foods should not be taken in addition to the diet unless the caloric value is being intentionally increased. Diabetic jellies, jams, and preserved fruits all contain glycerine which is burnt as sugar, and must be calculated as a part of the carbohydrate ration.

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[1] Diet Tables: E. P. Poulton. J. and A. Churchill.

[2] Food Tables: G. A. Harrison and R. D. Lawrence. H. K. Skinner and Co.

[3] The Diabetic Life: R. D. Lawrence. J. and A. Churchill.

# Special Articles.

## THE TECHNIQUE OF PERORAL ENDOSCOPY.

BY CHEVALIER JACKSON, M.D., Sc.D.

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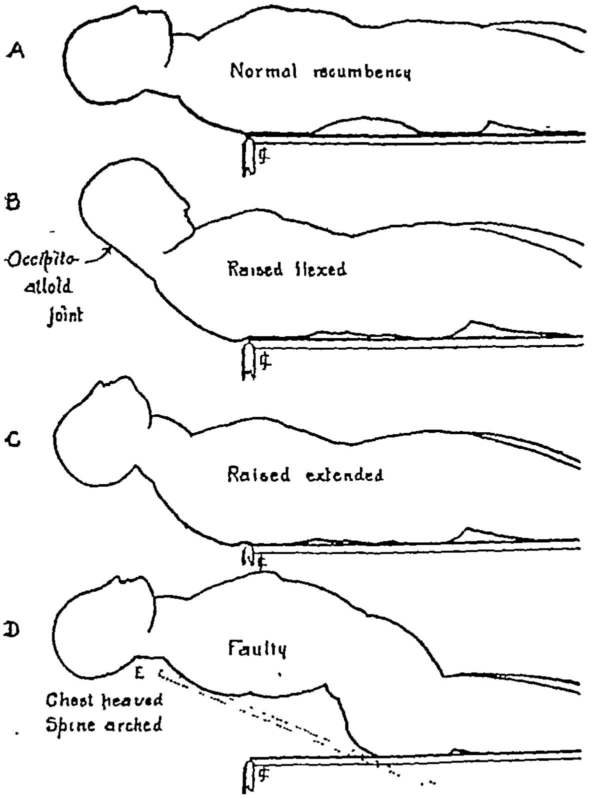
IN presenting here, in response to a request, a description of the technique used at the Bronchoscopic Clinics of Philadelphia, I have no thought of urging others to adopt any of the methods we use here. It seems necessary to state our reasons in connexion with some of the details; but these reasons, cogent to us, may not appeal to others. In this field, as elsewhere, every operator should decide all questions in relation to his patient as an equation in which the given terms are the operator, the available armamentarium, and all the various features of the particular case under consideration. The latter will include the age and condition of the patient, the presence or absence of secretions and secondary pathology, the mechanical problem, and especially the presence or absence of dyspnœa.

FIG. 1.



Schema of position for endoscopy. A. Normal recumbency on the table with pillow supporting the head. The larynx can be directly examined in this position, but a better position is obtainable. B. Head is raised to proper position with head flexed. Muscles of front of neck are relaxed and exposure of *larynx thus rendered easier*; but for most endoscopic work a certain amount of extension is desired. The elevation is the important thing. C. The neck being maintained in position B, the desired amount of extension of the head is obtained by a movement limited to the occipito-atloid articulation by the assistant's hand placed as shown by the dart (B). D. Faulty position. Unless prevented, almost all patients will heave up the chest and arch the lumbar spine so as to defeat the object and to render endoscopy difficult by bringing the chest up to the high-held head, thus assuming the same *relation of the head* to the chest as exists in the Rose position (a faulty one for endoscopy), as will be understood by assuming that the dotted line E represents the table. If the pelvis be not held down to the table the patient may even assume the opisthotonos position by supporting his weight on his heels on the table and his head on the assistant's hand. (From a drawing by the author.)

### *Drill.*

We study all these factors but our procedure is always the same, and every member of the team is drilled for months in the steps. If the case is a difficult and dangerous one every member of the team is going through the same old routine and confusion is avoided. If the case is an easy one no harm has been done by our excess of preparedness. The object of drill in an army is not for purposes of parade. Its fundamental advantage is that when anything is to be done it will be done with promptness and precision. Without drill the army would be a mob. In endoscopic work, especially with babies, who constitute the majority of foreign body cases, serious emergency cases will come to the operator, and lack of the promptness and precision which only drill can give will surely increase the mortality-rate of the clinic. Fortunately, the widespread development of bronchoscopy and œsophagoscopy for the diagnosis and treatment of disease affords abundant opportunity for the drilling of an organisation on adult patients without risk, while at the same time these patients are receiving benefits that alone fully justify the procedures.

### *Anæsthesia.*

We do not use general anæsthesia for any endoscopic procedure. The chief reason is that we think it is dangerous in certain cases, and needless in any case. Since we are accustomed as a routine to work without it, the work upon a patient in whom the use of general anæsthesia would probably be fatal is an everyday matter of the same old routine, involving no unusual procedure. Most of the deaths during endoscopy under general anæsthesia are due to mechanical obstruction of the airway, usually in a patient dyspnœic beforehand. It is accepted that the risks of general anæsthesia in the general run of surgical work are so slight as to be negligible. It is also accepted that safety in general anæsthesia depends upon an unobstructed airway, the maintenance of which is the anæsthetist's chief duty. In endoscopic work, laryngeal, tracheobronchial, or œsophageal, the airway to the lungs is often obstructed, either by the lesion, the foreign body, or the manipulations. The obstruction of the airway can reach a degree productive of deep cyanosis or even arrest of respiration without the slightest danger, if no general anæsthetic is being used, because the moment the airway is cleared respiratory movements return, or if they do not, intermittent pressure on the chest will promptly start them. Respiratory arrest in an anæsthetised patient is always a dangerous condition. More deaths on the table have occurred from general anæsthesia for œsophagoscopy than from that for bronchoscopy because of compression stenosis of the trachea caused by the crowding forward of the "party wall." Foreign bodies at the bifurcation may shut up both bronchi. Laryngeal foreign bodies and lesions cause extreme dyspnœa. The diagnosis of diphtheria of the larynx when no membrane exists in the fauces, in children too young for mirror examination, can be made only by direct laryngoscopy. It requires but a moment to take a diagnostic look at the larynx, and to get a swab specimen, in any child with croupy cough. We feel that the laryngologist should be able to look at the larynx of a croupy baby without anæsthesia, general or local, otherwise the practitioner will not avail himself of this diagnostic procedure. The unusual degree of bronchial expansion accompanying the deep inspiration that follows cough, when no anæsthetic is used, has been of the greatest aid to us, by opening up forceps spaces in cases of tightly fitting foreign bodies. The foregoing is not an effort to persuade anyone to work without anæsthesia. Everyone should do as he thinks best. It has seemed necessary for us to give our reasons for working as we do.

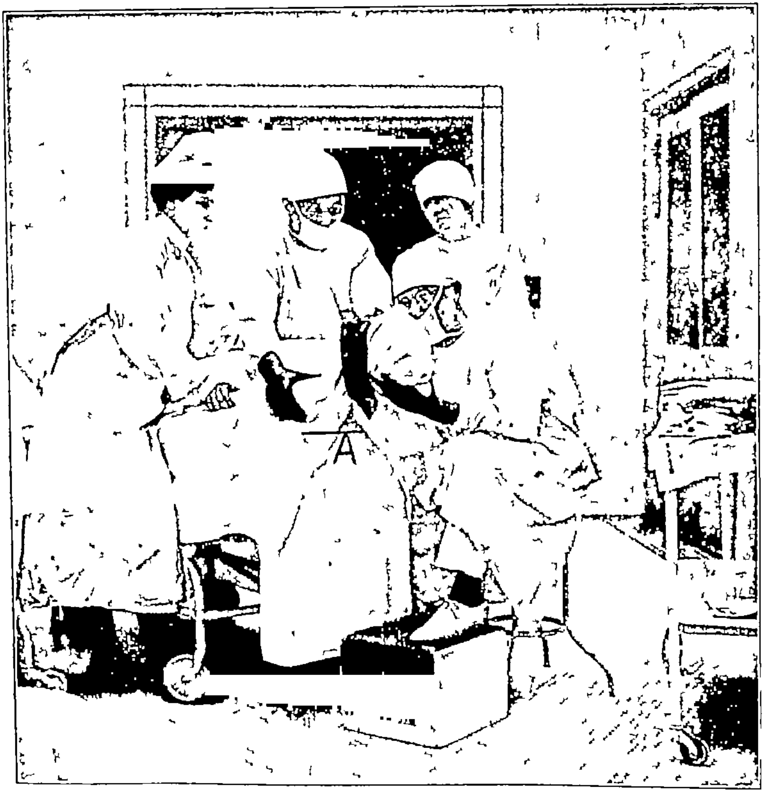
Our custom in regard to anæsthesia may be summarised as follows.

1 No anæsthetic, general or local, is used for œsophagoscopy in either adults or children

2 No anæsthetic, general or local, is used for any endoscopic procedure in children

3 In adults, for direct laryngoscopy and for bronchoscopy, the first few times, cocaine solution is applied to the pharyngeal mucosa in the region of the superior laryngeal nerves with two curved applicators used simultaneously If bronchoscopy is to follow the direct laryngoscopy cocaine solution on a bronchial applicator, or from an atomiser, is sometimes applied through the larynx, but in most cases endobronchial application is deferred until the bronchoscope has been inserted, and it may then be omitted

FIG 2



Position of patient and assistants for introduction of the bronchoscope and œsophagoscope. The middle of the scapulæ rests on the edge of the table the head and shoulders free to move, are supported by the assistant, whose *right* arm passes under the neck the *right* middle finger inserts the bite block into the *left* side of the mouth. The *left* hand, resting on the *left* knee maintains the desired degree of elevation extension, and lateral deflection required by the operator The patient's vertex should be 10 cm. higher than the level (A) of the top of the table. It is essential for the assistant to have constantly in mind that the *right* forearm must not support the neck, all the support must be of the head only and must come from the *left* hand. This is the Boyce position, which has never been improved upon for bronchoscopy and œsophagoscopy, but for satisfactory results every detail must be precisely adhered to

4 As a sedative, morphine, sometimes combined with hyoscine or atropine, is usually given for the first bronchoscopy to lessen apprehension and diminish reflexes. Sedatives are not ordinarily used for œsophagoscopy, though there is no objection to their use

5 If repeated bronchoscopies are necessary, as in the bronchoscopic aspiration of pulmonary suppurations of other than foreign body origin, the sedative and the cocaine are diminished in dosage and are soon omitted altogether in most cases.

### *Position of the Patient*

We always put the patient in the recumbent position The head is held high above the level of the table and the shoulders are held down on the table (Fig 1) The trunk must be controlled to avoid the arching of the spine, as in opisthotonos The knees are held down on the table. The foregoing refers to work in the larynx and to the starting of the tube downward in bronchoscopy and œsophagoscopy As the tube goes downward the head is lowered as required by the operator in order for him to follow by sight the lumen of the trachea, bronchi, or œsophagus. Exposure of the orifice of the middle lobe bronchus requires a very low head; so does the passage through the lower third of the thoracic œsophagus and the abdominal œsophagus; so also does exploration of the stomach. In endoscopic work in the lower œsophagus and stomach relaxation of the diaphragm and abdominal muscles is favoured by flexion of the knees. For direct laryngoscopy the patient's head is held above the table. When the laryngoscopy is preliminary to the introduction of a bronchoscope the patient's head is held out in the air, toward the operator and above the level of the table, the head end of which is dropped (Fig. 3).

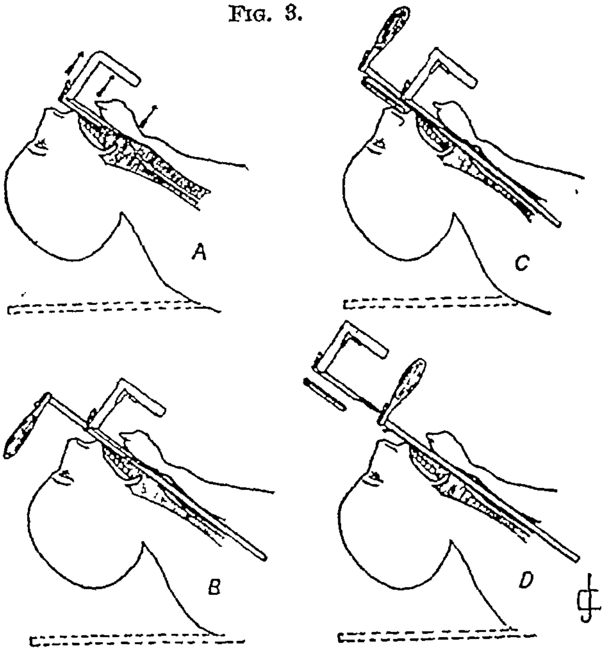
*Direct Laryngoscopy.*—Exposure of the larynx to direct inspection with the patient properly placed and held in the recumbent position is easily done on any patient whose mouth can be opened. Any deviation from the proper position may render it exceedingly difficult. We always use the *left* hand to hold the laryngoscope. This leaves the right hand free for handling laryngeal operating instruments and for the insertion of the bronchoscope without changing hands; and it calls for no greater degree of ambidexterity than the left-handed use of thumb-forceps in dissection, or the left-handed use of the fork while cutting meat on one's plate. It is all a matter of starting right in learning to use the instruments. The coördinate use of the laryngoscope in the left hand and the forceps in the right gives a facility in endolaryngeal operating that seems to us unobtainable with a mechanically held laryngoscope; but we may be biased. Be this as it may, there is no question as to the necessity for left-handed use of the laryngoscope if any degree of facility is to be acquired in bronchoscopy.

The laryngoscope is introduced back along the dorsum of the tongue and the tip of the epiglottis is exposed to view. The lip of the laryngoscope is inserted beyond the proximal edge of the epiglottis for a distance of not more than 1 cm. in a child or 2 cm. in an adult. Then a powerful lifting motion, sufficient to sustain the weight of the patient's head, is imparted to the laryngoscope in the direction of the dart shown at A, Fig. 3. At this point particular care to keep the patient's shoulders down on the table is necessary. Prying on the upper teeth as a fulcrum must be avoided. The patient not being anæsthetised, there will be no glottic chink until he takes a deep breath. If the patient is 3 years of age or over he is told to take a deep breath. If he is under that age he will soon do so without being told.

*Insertion of the Bronchoscope.*—Once the vocal cords are exposed with the direct laryngoscope held in the left hand the insertion of the bronchoscope is easy. The bronchoscope, illuminated with its own lamp, is passed to the operator in exactly the proper position for insertion (point forward, "handle" to the right). The operator, after inserting the bronchoscope in the laryngoscope, transfers his eye to the bronchoscope, and, making sure of the presentation of the vocal cords, insinuates the slanted end of the bronchoscope carefully between them. The exploration of the tracheobronchial tree is a matter of following the lumen, and is greatly facilitated by the position above described, which leaves the head of the patient free to be moved about widely in every direction.

*Introduction of the Œsophagoscope* calls for the exact position of the patient described above. With the œsophagoscope vertical the operator finds the right pyriform sinus by sight, no mandrin being used. Passing downward, the first obstacle is found at the bottom of the hypopharynx, in the rigid contraction of the cricopharyngeus muscle. It is necessary to wait for this to relax, but while waiting continuous *gentle* advancing pressure must be maintained and at the same time the œsophagoscope must be pressed anteriorward by the left thumb, to lift it away from the posterior weak point, where it otherwise is almost certain to perforate. This must be done without lowering the head of the patient. The "handle" of the œsophagoscope is not grasped in the hand. It must be up, by which we know the lip of the tube-mouth is anterior and away from the danger point. The general direction of the entire œsophagoscope is maintained by aiming for the median line as indicated by the midline of the sternum, notwithstanding the fact that we are starting from one side, in the right pyriform sinus. The opening of the lumen is watched for in the *anterior* part of the field. The relaxation of the cricopharyngeal pinchcock is usually accompanied by a regurgitation of saliva, and the slanted end of the tube-mouth glides over anterior to the relaxing cricopharyngeus muscle. Exploration of the thoracic œsophagus is simply a matter of following the lumen as it opens up ahead, a procedure easy of accomplishment when the head is held in the air, free to be moved in every direction, as indicated above. At the hiatus œsophageus the œsophagus goes through the diaphragmatic pinchcock. Just as the rubber tube of a curette is pinched tightly shut by the spring clip known as a pinchcock, just so we have the œsophagus pinched together at the hiatus by the crura and the muscular fibres of the diaphragm. The point in the lumen of the œsophagus corresponding to this pinchcock closure is found by lowering the patient's head to the right and aiming the œsophagoscope (or gastroscope) for the anterior superior spine of the left ilium. Gentle but continuous pressure on the proper place will be rewarded after a few moments of patient waiting by the relaxation of the pinchcock. The opening of the hiatal constriction is usually accompanied by a rush of gastric fluid, which will be clear if the stomach is "empty" and normal; otherwise it may be mixed with pus, blood, or food. Once the hiatus is passed the œsophagoscope slips so quickly and easily through the abdominal œsophagus that the existence of an abdominal œsophagus is not realised. There is no constriction of any kind, functional or structural, noticed at the cardia, only a faint difference in colour and a marked difference in the form of the folds.

FIG. 3.



Schema illustrating oral bronchoscopy. The portion of the table here shown under the head is, in actual work, dropped all the way down perpendicularly. It appears in these drawings as a dotted line to emphasise the *fact* that the head must be above the level of the table during introduction of the bronchoscope into the trachea. A, Exposure of larynx; B, bronchoscope introduced; C, slide removed; D, laryngoscope removed leaving bronchoscope alone in position. (The three figures are from Bronchoscopy and Œsophagoscopy. W. B. Saunders Co.)

*Gastroscopy.*—Exploration of the explorable area of the stomach is carried out in the collapsed state with the open tube œsophagoscope by traversing it upward and downward, moving the tube laterally to a new location at the end of each traverse, as with the mechanical stage of the microscope. If desired a lens system may be inserted in the open tube and the stomach inflated for inspection. The greatest obstacle to reaching the pylorus, especially in adults, is the forward bulging of the spinal column. In children it is not very difficult to reach the pylorus; we have removed perorally a number of times foreign bodies jammed in it.

## ROYAL MEDICAL BENEVOLENT FUND AND GUILD.

### THE FUND.

THE annual meeting of this Fund was held on Tuesday, April 20th, when the Committee of Management, in presenting their report for the previous year, were able to show an increase of £1000 in new subscriptions and a larger distribution of moneys. Altogether 559 persons had been relieved, 392 by grants and 167 by annuities. The income derived from subscriptions and donations amounted to £6685, as against £4780 received in 1924, and that from invested property £4790, as against £4343 in 1924. The amount expended in grants was £5371, as against £5001 in 1924, and in annuities £3870, as against £3467 in 1924, making a total distribution of £9241. The total expenditure was £10,549, including working expenses, £1308, of which £80 was spent on furniture for the new office.

#### *Legacies and Special Donations.*

The following legacies were received: Dr. E. Riley, £250; Dr. E. A. Edelsten, £25; Sir Anderson Critchett, £100; Dr. M. G. Evans (in stocks) to the nominal value of £3325; Dr. W. H. Mason, £200; Dr. Bowen Hogg, £300; Miss E. J. Humby, £100; and Sir Rickman Godlee a contingent legacy of £5000. As the invested funds have now reached over £100,000, the legacies received during and after 1925 will be divided equally between the annuity and grant departments, the amount to be spent annually by the grant department not exceeding one half of the average of the legacies received in the previous five years.

Grateful acknowledgments were made in the report of a special donation of £1000 from Dr. W. Tinker; a grant of £525 from the Medical Insurance Agency; sums of £100 from Messrs. Wanders Ltd. and from Prof. T. K. Monro; of £50 from Mr. E. Hurry Fenwick, from Dr. and Mrs. Smyth of Bristol (towards the Christmas gifts), and from a subscriber as a donation, based on two guineas for every year he had practised. This donation was supplemented by a gift of £20 and accompanied by a letter stating: "I have a very guilty conscience for not having supported the most excellent Fund." The total amount received towards the Christmas Gift Appeal was £113 18s. 0d.

#### *Grant Department.*

The demands on this department, said the report, have increased, and an increased income has not been sufficient adequately to meet the urgent applications. Grants are divided into two categories, those of a temporary nature of £5 or under and those of £12 to £40 payable in monthly instalments, and the report regrets the want of money which prevents larger grants from being given. "The Committee feel," the words run, "if the distressing nature of the cases brought before them with the appalling state of poverty and frequently of starvation which investigation proves to exist were more widely recognised, a much more liberal response in the shape of subscriptions and donations would be forthcoming, and without this it will be impossible to continue assistance, even on the present basis.

#### *Annuity Department.*

The funded property now stands in the balance sheet at £103,887, the income realised was £4580, an increase of £237 over the figure for 1924, and £3850 was distributed to 167 annuitants in sums of from £10 to £40. During the year 11 annuitants died. The Committee elected 39 annuitants and in 17 instances the annuities were increased. The Fund is able to grant 20 annuities of £40; 19 of £30; 30 of £26; and 64 of about £20.

#### *War Emergency Fund.*

A full account of the origin and working of this Fund, together with the names of the Committee, was given in the report issued in 1923. During the past year £1778 4s. 2d. has been distributed, the greater part—viz., £1848—for the education of 29 children, and the remainder in grants to six medical officers. There remains a balance of £523 13s., which has already been allocated.

#### *Election of Officials.*

Sir Thomas Barlow, Bt., was re-elected President. Sir Charters Symonds, K.B.E., Hon. Treasurer, and Dr. Newton Pitt and Mr. R. M. Handfield-Jones were re-elected Hon. Secretaries. Mr. George Bethell, who has been secretary for over 20 years, has retired in serious ill-health and has been granted a pension. Mr. Haines Carter was appointed in September last to succeed him.

### THE GUILD.

The Guild gives help to the beneficiaries of the Fund by distributing comforts in the shape of special foods, clothes, and coals, and renders invaluable assistance in coöperating with the Fund in cases where there are children to be educated. The heavy demands which those in extreme poverty make on the Fund unfortunately prohibit the Committee from contributing more largely towards the educational work of the Guild.

Constant and close coöperation is maintained between the Fund and its Guild, whose increasing importance on the educational side is recognised. Those having opportunity of obtaining special terms at schools in the way of foundation scholarships or bursaries, or again, the means of obtaining training for young people of both sexes, are urged in the report to communicate with the secretary of the Guild, for while the parent Fund deals with the aged and the infirm, the vast importance remains of enabling the rising generation to become self-supporting.

The report closed with a tender of "thanks to the hon. auditors, Messrs. Deloitte, Plender, Griffiths and Co., and to the editors of THE LANCET and of the *British Medical Journal* for their readiness at all times to help the Fund, and for publishing monthly reports of the meetings."

### RECENT GRANTS.

At the last meeting of the Committee of the Royal Medical Benevolent Fund 53 cases were considered and £548 was voted to 40 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 47, of M.D. Aberd. who practised in London and died in 1924. Two sons, aged 18 and 14. Eldest is a cadet in Royal Air Force. Youngest at school; fees paid by Officers' Association. Applicant and younger boy have been living on proceeds of sale of practice. She is a medical woman and her chief difficulty arises from lack of work. A special grant of £14 was made by the Fund to meet outstanding rent.

Daughter, aged 50, of M.R.C.S. who practised in Surrey and died in 1889. Was in a home for several years. Latterly has been able to do light work, but had to leave her last employment through ill-health. An emergency grant of £1 was given to tide her over. She has now secured another post.

Daughter, aged 39, of M.D. Irel. who was in the Navy and died in 1897. All money invested in Germany was lost in the war. Applicant has supported herself and her invalid mother, but owing to recent ill-health has not been able to earn enough to keep them. Neither the applicant nor her mother is eligible for a naval pension as her father commuted his pensions and retired three years before he died. An emergency grant of £3 10s. was given. The applicant is a B.A. and is at present seeking some light post: her health is very indifferent.

Widow, aged 94, of M.R.C.S. who practised in Somerset and died in 1867. Up to the age of 75 supported herself by taking in lodgers. She has made her home with friends for the last 20 years, but now is so old and feeble that she requires constant attention. She has the Old Age Pension and £20 from the Lenoup Charity, and we are asked to supplement this to enable her to have an attendant. Rent 10s. per week. Voted £10 in 12 monthly instalments.

Daughter, aged 66, of a surgeon who practised in the Midlands and died in 1875. Applicant and her sister, aged 61, have managed to maintain themselves since their father died, but owing to illness and ill-health are now without money for necessities. The applicant has managed to earn her living as a hosiery machinist until recently and now receives 9*s.* a week disablement benefit. Her sister at present is very ill and in hospital. Voted £12 in 12 monthly instalments. A grant for the sister will be considered later.

Daughter, aged 74, of M.R.C.S. who practised in Wiltshire and died in 1876. She had a school for 35 years and has had to sell it in order to refund money to the estate of her late partner. Nothing left after sale; she hopes to be able to live with a friend who has a small income of £80 per annum. Applicant has secured the Old Age Pension. Fund voted £30 in 12 monthly instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., at 11, Chandos-street, Cavendish-square, London, W. 1.

## MINERS' PHTHISIS IN SOUTH AFRICA:

### COMPENSATION CLAIMS.

THE Miners' Phthisis Medical Bureau, Johannesburg, have issued certain recommendations in regard to medical evidence in support of claims for benefits by miners or dependents of deceased miners.

Medical practitioners attendant upon miners who are believed to be seriously ill or dying from miners' phthisis, or from any other disease to which silicosis is believed to be predisposing or contributory, are urged in all cases to have the sputum examined for the presence of tubercle bacilli, if necessary more than once. The sputum should be expectorated by the patient in the presence of the medical attendant and should be examined at an institution where such examinations are made by experts. In South Africa the Government pathological laboratories at Cape Town and Durban and the South African Institute for Medical Research at Johannesburg carry out such examinations free of charge. A miner resident in the area of the Witwatersrand should be sent to the Miners' Phthisis Medical Bureau for examination during life. A complete clinical and bacteriological examination will thus be assured, and also a radiographic examination, if the patient is able to be subjected to the latter. The evidence obtained by either of these procedures may, in a number of cases, enable the Bureau to place the miner in the pensionable stage of miners' phthisis during life, and thus to secure his position and that of his dependents. A miner resident at a distance from the Witwatersrand, who has not been previously certified by the Bureau to have silicosis or tuberculosis, or who has not been proved to be expectorating tubercle bacilli, should obtain, wherever possible, a good instantaneous X ray negative of the chest, preferably on a film. This should be certified by the radiographer to be that of the miner in question.

In the event of death, in cases in which the above steps have not been adopted or have been adopted with inconclusive results, the Bureau suggest that a post-mortem examination should be made of the lungs of the deceased, in order that the exact condition of these organs should be determined. In all post-mortem examinations held within the Union of South Africa upon the body of a miner or ex-miner, if silicosis or tuberculosis is found in the lungs, the Miners' Phthisis Act of 1925 requires that such lungs shall be forwarded to the Medical Bureau for examination. When autopsies are held outside the Union of South Africa, the lungs, certified to be those of the deceased, should be forwarded for examination and report to an expert pathologist, preferably one who is attached to a public institution. A detailed report by the latter upon the appearances found in the lungs should thereafter be transmitted to the Medical Bureau.

A final paragraph urges the need of a post-mortem examination in all cases unless the presence of silicosis has already been certified by the Bureau, or has been definitely revealed by X ray examination during life, and in addition tubercle bacilli have been found in the sputum. An autopsy is frequently the only possible means of deciding whether a slight degree of silicosis, previously incapable of detection, is associated with a condition of tuberculosis. In the experience of the Bureau the result of a post-mortem examination has just as often confirmed an opinion, formed upon clinical grounds during life, as to the presence of silicosis, as the reverse, and the evidence which such an examination affords may thus be of decisive importance in respect of a claim by the dependents of a deceased miner.

## IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *Municipal Administration of Dublin and Cork.*

DURING the past few years the control of the local authorities has been suspended in no less than 17 areas in the Irish Free State, and in these areas commissioners are exercising the normal functions of the local authorities. The most important areas so administered are the cities of Dublin and Cork, and it is recognised that in both cases there has been an increased efficiency accompanied by a decrease in the rates. The Local Government (Temporary Provisions) Act, 1923, which empowers the Minister of Local Government and Public Health to suspend local authorities and appoint commissioners, limit such suspension in each case to three years. In the case of both Dublin and Cork this limit is now nearly reached, and it is expected that the Minister will seek further powers by legislation to enable him to prolong the period of administration by commissioners in those two cities, if not elsewhere.

### *Suspect Shaving-brushes.*

Some alarm has been caused in Dublin by the warning given last week by the medical officer of health for the city that a consignment of suspicious shaving-brushes had reached Dublin last winter. Dr. M. J. Russell, in a letter to the papers, states that he has been informed by the medical officer of health for Glasgow that shaving-brushes imported from Czecho-Slovakia are infected with anthrax, and that, in December, two gross of these brushes were consigned from Glasgow to a firm of auctioneers at an address in O'Connell-street, Dublin. This firm is stated to have since gone out of business. Dr. Russell advises anyone who may have bought shaving-brushes at any of the auctions at the address stated to have them destroyed at once. No case of anthrax has yet been notified, but Dr. Russell's warning is very wise.

### *Death of Major-General R. H. S. Sawyer, A.M.S.*

The medical profession of Dublin, as well as his old comrades in the Army Medical Service, will learn with great regret of the death of Major-General R. H. S. Sawyer, C.B., C.M.G., which took place after a short illness at his residence in Dublin on April 23rd. General Sawyer was educated at Trinity College, Dublin, and passed Bachelor of Medicine in 1879. He became a Fellow of the Royal College of Surgeons in 1887, and has been a member of the Council of that College since his retirement from the Service in 1918. He entered the Army Medical Service early in life, and served in the Hill Expedition of 1898, in the South African war, and in the Great War, being frequently mentioned in despatches. He was promoted major in 1893, lieutenant-colonel in 1901, and colonel in 1910. In the European war he was for some time Deputy Director of Medical Services at Boulogne, retiring at the beginning of 1918. Since his retirement he lived in Dublin, where he renewed many old and formed several new friendships. He was a modest, unassuming man, courteous to all, and much liked by those who were privileged to serve under him. He was in his sixty-ninth year, and enjoyed good health until a few weeks ago, when he contracted broncho-pneumonia, to which he succumbed.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

### *Ultra-violet Rays and Growth.*

Springer and Tardieu, of Paris, have been studying the effects of depriving animals of sunlight and the therapeutic action of ultra-violet rays. A litter of five rabbits born in underground obscurity was kept under observation. At the sixth week three of them—the least heavy and least developed of the five—were irradiated, and this treatment was repeated on about a dozen occasions with increasing dosage. All three at once underwent a remarkable change in their general development, weight, and vitality. The other two rabbits, which were more vigorous and were therefore chosen as controls, were kept without sunlight or irradiation, and showed a steady diminution in growth; their weight became less and less and at last they died paralysed in the hind quarters. Post-mortem examination revealed no definite macroscopic lesion and no sign whatever of rickets. The three rabbits which were irradiated had not been shaved, which proved that a covering of hair does not stop the rays. According to the authors, there are two main factors which have a part in the production and utilisation of the energy of growth, and which may explain the way in which ultra-violet radiation acts. One of these is the osmotic pressure; this regulates the amount of penetration into the body cells of the molecules whose fixation represents the degree of growth activity. The other is the production of intra-organic electricity All the causes which increase the production of organic electricity—and notably ultra-violet rays—increase the phenomena of nutrition and growth. Ultra-violet rays appear to have effects apart from those of light, for they produce ozone and thus promote tissue oxidation, and they also augment the intra-organic electricity and osmotic pressure.

### *A New Treatment for Parkinsonism.*

Three Lille doctors, M. Polonovski, P. Combemale, and Nayrac, have been treating patients with Parkinson's syndrome with N-oxide of scopolamine, a new compound belonging to the group of genalkaloids. The results obtained have been very satisfactory. Much less toxic than scopolamine, this alkaloid has a therapeutic action in every way similar or even better. It has a considerable effect in reducing the troublesome rigidity, muscular hypertonus, tremor, and excessive salivation so characteristic of this condition The doses used were from 2 to 4 mg. daily, and administration could be continued for several months without leading to tolerance.

### *Gastric Ulcers and Foreign Bodies.*

Dr. Victor Pauchet, of Paris, recently operated on two false gastro-duodenal ulcers. One of the patients had swallowed a pin and the other four needles. These foreign bodies were implanted in the coats of the pylorus and remained there for several years. A diagnosis was only made at operation, for radiographic examination did not reveal the foreign body In the first case he found an inflammatory mass in the pylorus produced by four needles shut in the walls of the stomach; in the second there was a pin which had been there for 30 years. The symptoms in both cases were pain and repeated hæmatemesis. Sometimes there were definite crises of pain with periods of freedom just like those met with in ordinary gastric ulcer.

### *Lymphatic Influenza.*

Dr. Rousseau Saint-Philippe, of Bordeaux, has just described a special form of influenza that he has observed in children. It chiefly affects the lymphatic glands, connective tissue, and muscles of the cervical region. The symptoms begin with acute rhino-pharyngitis and they may be latent, subacute, or frankly acute. In this last form the puffiness suggests acute inflammation and suppuration seems likely; but resolution is the rule, and an abscess occurs only very exceptionally. The characteristic features of the disease are that it is always preceded or accompanied by slight catarrh of the upper respiratory tract, and that the subsequent swelling of the lower cervical region comes on abruptly and is afterwards definitely painful. It is best treated by hot applications, though local and general disinfection should not be forgotten.

### *Medical Responsibility.*

A workman invited one of his friends, an orderly at a private hospital, to give him some injections of cacodylate, and these injections were made in the hospital clinic unknown to the doctor in charge. After the twelfth injection inflammation developed, which resulted in the workman being admitted to another hospital, and so he brought an action for 50,000 francs damages against the medical practitioner of the clinic, whom he tried to make responsible for the acts of the orderly. The tribunal dismissed this demand, considering that the workman had made a direct application to the unqualified man to take care of him, had not approached the doctor, had had the injections at his own risk, and, therefore, had no claim on the director of the clinic.

### *Payment of Interns in Paris Hospitals.*

The interns in Paris hospitals receive from the Ministry of Public Assistance during the first year of their service an annual salary of 488 francs. This is raised gradually until, in the fourth year, they get 533 francs. They are also entitled at midday to food, whose value is estimated by the Ministry at Fr.2 90. These sums are inadequate nowadays. Five or six years of medical study are required before a man can become an intern, and he remains in that position for another four years. These doctors demand that their salary shall rise from 9000 francs a year for the first year to 10,200 francs for the fourth. They also ask to be lodged and to be paid during their month's holiday as is done in provincial hospitals. It is clear that a sum of 1000 to 1200 francs a month is the least that they can live on in Paris.

### *Salaries of Teaching Staffs.*

Recent decrees have altered the payment of the teaching staff of the faculties. At Paris the professors of the third class receive 29,000 francs annually; those of the second class get 32,000, and those of the first get 35,000. The agrégés engaged in teaching receive 21,000 francs; if they give no instruction they have only 13,500. The chefs de travaux receive, according to their class, from 18,000 to 21,000 francs and the préparateurs from 14,000 to 17,000 francs. In provincial faculties the scale of payment is rather lower.

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## VIENNA.

(FROM OUR OWN CORRESPONDENT.)

### *Cause of the Deaths following Toxin-Antitoxin Administration.*

SOME 18 months ago there was a most unfortunate occurrence in one of our children's institutes. Six children died soon after receiving prophylactic injection against diphtheria, the chief symptoms being those of heart failure, and although the incident was at first kept secret the facts soon leaked out and a good deal of public feeling was aroused. Official explanations followed which culminated in the assertion that by an unknown and hitherto novel process a disintegration of the liquid must have taken place which destroyed the antitoxin and left only the toxic substance in action. The entire supply of the toxin-antitoxin mixture which had been manufactured at this time was withdrawn from the market; this was an easy matter because there is only one institute making this product in Austria. Naturally the confidence of the public, not to speak of the medical profession, was seriously shaken, and many people refused to have anything more to do with this kind of prophylactic injection although it is used extensively in other countries. There were those, however, who remained dissatisfied with the official version, and after prolonged investigation Prof. R. Grassberger, head of the public health department and professor of hygiene in the University of Vienna, now states that the cause of the accident was that in filling the ampoules the antitoxin was forgotten. According to this view the method was not in any way to blame, and it was simply negligence that was responsible for the disaster. Prof. Grassberger's open and bold statement has caused immense excitement, especially in the official quarters responsible for the institute which prepared the serum, and when he announced his intention of reporting on the affair and of producing his proofs in a paper to be read before the Medical Society such pressure was brought to bear on the society that the professor resigned his membership and withdrew his paper. Public attention, however, has now been thoroughly roused and both sides will have to produce their evidence; undoubtedly the matter will be cleared up before the courts in a short time.

### *Vacancies in the Medical Faculty of Vienna.*

A serious situation in the University of Vienna has been caused by the unexpected death of several professors within a short time of one another. A few weeks ago Prof. Friedrich Dimmer, the well-known ophthalmic surgeon, died at the age of 70 years, and his eye clinic, of which he had been the director for many years, will perhaps be dissolved. Such at any rate was the intention of the Ministry of Finance which has to find the funds for the institution, and naturally it has caused widespread consternation in medical circles. It has been justly pointed out in numerous articles and resolutions that the ever-increasing importance of ophthalmology, and of Vienna ophthalmology especially—we may recall the names of Fuchs, Fäges, and Arlt—did not allow of a purely bureaucratic measure of this kind, which would drive away many students and doctors from this country, and thus result in the loss of more money than could be saved in abolishing the expenses of the clinic. It is to be hoped that the idea will be definitely abandoned. The University staff has suffered another serious loss by the sudden death of Prof. Josef Kyrle at the age of 46 years. He had already done important work in dermatology, his principal investigations being concerned with the treatment of syphilis by malaria, the histology of skin diseases, and the eunuchoid conditions. He was destined to succeed Prof. Gustav Riehl, who is now finishing his honorary year and has passed his seventieth year, when he has to retire according to the rules of the University. Kyrle was a brilliant teacher whose clarity and impressive diction were reminiscent of the famous teachers of 40 years ago when Vienna was the Mecca of medicine.

### *Luetic Infection from a Corpse.*

At a recent meeting of practitioners a case was demonstrated of a rare infection with lues, when a student had injured his finger at a post-mortem on a prostitute who had been dead for about four hours. An ulcus durum appeared in due course at the site of the lesion and a salvarsan course is being given to the student. A similar case was reported by Prof. Lang in Vienna in 1900, and his patient was demonstrated some time ago by Dr. J. Löwy in Prague suffering from luetic hemiparesis, whilst Prof. A. Ghon has also reported the occurrence of luetic infection from a corpse only two hours after death. These cases prove the vitality of the *Spirochæta pallida* and should be a warning to pathologists.

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Manchester Dental Hospital.—The forty-second annual report, whilst recording an increase of nearly 2000 in the number of patients treated during the year, states that only £504 has been subscribed in answer to an appeal for £10,000, and that the deficit is now over £2000.

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## BUCHAREST.

(From our own Correspondent.)

### *Public Instruction in the Laws of Health.*

At a meeting of the Medical Society held recently Prof. Manicatide recommended the teaching of hygiene in the lower classes of secondary schools. As he pointed out, nearly every medical officer of health year by year deplores the immense wastage of infant life, and, though some of this wastage is the result of neglect and indifference, very much more is due to ignorance. Hundreds of lives are lost every year because the public does not know the simple laws of health, and a large number of infants' lives are sacrificed because people cling to old superstitions about measles and whooping-cough. These are still thought of as mild diseases of no account, in spite of oft-repeated warnings that they kill more than all the other so-called dangerous infectious diseases put together. In some parts of Roumania it is commonly supposed that if a child with whooping-cough be set near an open fire so that he inhales the smoke he will get rid of the disease after one or two sittings. Efforts have been made to enlighten the public by scattering broadcast leaflets dealing with infant feeding and the like, and popular lectures are given. But the fact remains that amongst the poorer classes most mothers are unteachable, and it is now accepted that the best way to conduct the campaign for health is to give lectures and introduce the teaching of hygiene in the lower classes of secondary schools instead of leaving it till the children reach the top form, as has been done heretofore. By inculcating a few of the elementary facts about personal hygiene, domestic hygiene, and the feeding of infants into the next generation of school-children—and especially of girls—the public health would undoubtedly gain enormously.

### *Mental Derangement after Typhoid.*

In a recent paper on this subject Dr. Munteanu referred to the great vagueness of the literature, the only comprehensive work attempted having been done by some Paris students a score of years ago, and later by an American, Dr. Edsall. The frequency of mental changes, the character of the psychosis, and the prognosis when they have developed are the points of special interest. The idea among clinicians that derangement is relatively rare is an erroneous one, about 100 cases being easily found in literature. It is commonly stated that the changes are maniacal, but many cases of dementia and melancholia have been recorded. A boy of 11 years in Dr. Munteanu's practice, who had severe typhoid and was subsisting on a low diet on account of hæmorrhages, developed delusions and symptoms of meningitis. He recovered from both. Another child developed a psychosis characterised by irrelevant fears, delusions of all the senses, and extreme irritability. His condition gradually improved. Clinicians say that the cases recover; psychiatrists say that they do not. The best policy is to feed the patient well whenever mental symptoms occur, as a prophylactic against dangerous psychosis, for there is certainly some relation between the period of starvation and the incidence of insanity in these cases.

### *Changing Mortality Statistics.*

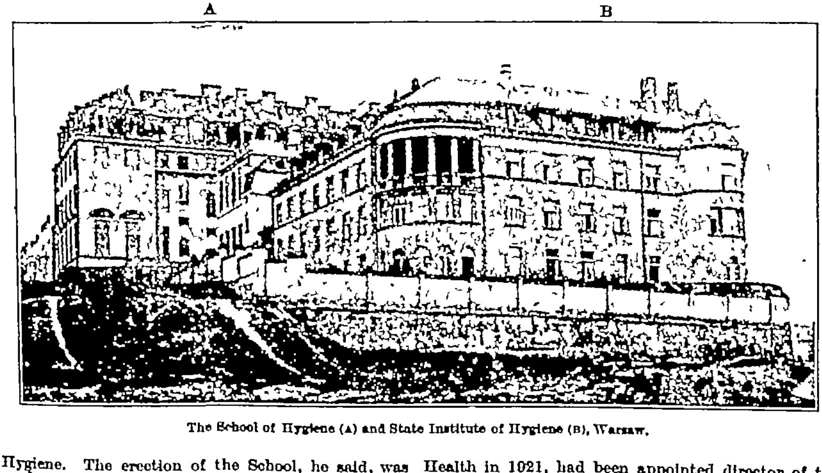
The Roumanian Statistical Bureau was established in 1923, and the first exact report on general mortality was published last month. It is demonstrated that the increase in pneumonia deaths from 1922 to 1925 was 2 per cent.; of heart disease, 5 per cent.; of apoplexy, 7 per cent.; and of cancer, 8 per cent. On the other hand, there has been a decrease of nearly 25 per cent. in deaths from consumption and of 15 per cent. in bronchitis. Better knowledge of infantile complaints and the growing use of the different antitoxins and serums have considerably reduced the mortality from the diseases of childhood in the last

20 years. From 1922 to 1925 there has been a decrease of deaths from cholera infantum of 16 per cent.; from diphtheria of 18 per cent.; and from convulsions 24 per cent. Some common ideas about the prevalence of diseases in certain areas are dispelled. Consumption caused, in 1925, deaths to the number of 118 per 100,000; in the same year the death-rate from this disease in Poland, a much colder country, was 138 deaths per 100,000.

## PUBLIC HEALTH SERVICE IN POLAND:

### NEW SCHOOL OF HYGIENE.

(FROM A CORRESPONDENT.)



The School of Hygiene (A) and State Institute of Hygiene (B), Warsaw.

THE new School of Hygiene was opened in Warsaw on Tuesday, April 20th, with appropriate ceremonial. The Prime Minister of Poland, Count SKRZYNSKI, opened the proceedings in French to an audience which included representatives of many European countries, of the United States of America, and Japan. He was followed by Dr. WROCZYNSKI, General Director of the Public Health Services of the Republic, who, speaking on behalf of the Minister of the Interior, welcomed the assembly who had been invited to participate in the inauguration of the new section of the Institute of Hygiene—namely, the School of Hygiene. The erection of the School, he said, was rendered possible by a generous subvention from the Rockefeller Foundation, and while he felt much gratitude for this most effective help, which had enabled his Government to open the new School, he expressed special appreciation of the moral support thus evidenced. In response to the subvention the Polish Government would provide for the maintenance of the School, which was erected on land belonging to the State; but he indicated that while the School is open it is not yet finished, equipment and such essentials as a library having yet to be found, in spite of additional and considerable expenditure incurred by the Government.

"The Rockefeller Foundation," he continued, "have done more for us. The housing difficulties make it imperative for us to provide dormitories for the students of the School. We were anxious, too, to set up a field station giving opportunity for practical work for the teaching staff and students, an office for the district medical officer of health, and a series of preventive medicine institutes. The Foundation, being prevented by its programme from giving financial assistance for the establishing of dormitories, was good enough to obtain for us coöperation with the Joint Distribution Committee, of New York, who will acquire jointly the necessary property for the Government.

"The creation of the School of Public Health," he said, "dates back to 1920, the first period of political existence of independent Poland, when epidemics were still raging on eastern territories and great effort was necessary to control the spread of infectious diseases consequent upon the war and the movements of refugees. We have learnt during that period that the efficiency of an epidemiological campaign and the effectiveness of all sanitary measures depend, in the first place, upon the standard of training of public health services, of their scientific equipment, and ability to perform the important task of safeguarding the safety and health of the people. The Institute of Hygiene, under its first name, that of the Central State Epidemiological Institute, was created in 1919, on the initiative of Dr. Ludwik Rajchman, its present director, and also the director of the Health Section of the Secretariat of the League of Nations, Dr. Tomasz Janiszewski, at the time Minister of Public Health, giving full support to the project."

Dr. Wroczynski then detailed the aims of the Institute and School, showing them to be designed to cover all the usual activities for the production of serums and vaccines, for biochemical work, for the investigation of epidemiological problems, and for providing machinery for the technical researches which form the basis for State and scientific measures. He showed that a school of public health was the logical development of the Institute, the object being to train fully qualified officers for administrative service, and added that Dr. Witold Chodzko, Minister of Public Health in 1921, had been appointed director of the School. An agreement had been concluded, he said, for full coöperation between the Rockefeller Foundation and the Government, the Foundation providing scholarships which enabled the present teaching staff to acquire the American methods of sanitation, raising the technical standard of the sanitary personnel. A legislative measure now enjoined that candidates for first-grade public health posts had to undertake a special course of hygiene lasting one year and including practice as well as technique. He pointed to the rapid development of public health service in Poland since the war, and insisted that the training of the public health officer could not stop at theory, for such an officer required practical knowledge of administration, of the organisation of sanitary institutes, and of the general importance of public health as it presented itself to the statesman and the legislator. He continued:—

"Our School of Hygiene, which proposes not only to train medical officers for the public health of the State, but also men destined to work in the State administration or the boroughs, has evolved a programme in which special attention is being given to the practical development of their work. A series of model sanitary districts, which keep in direct contact with the School as well as other institutions, has already been organised—one of an urban type and the other of a rural. This School forms, with the Institute and the public health service of the State, a complete unit, in a position to teach in the light of immediate requirements and in close contact with the problems which present themselves in collective life. The welfare, the physical and moral standards of the population, the efficiency of labour, and the progress of the country depend upon the competence of the administration. At the very moment when the reorganisation of the public administration must be effected on strictly economical lines, it is necessary to increase the efficiency of the individual to as high a level as possible. The realisation of the ideals can only be reached with a perfectly well-trained personnel, if a small one."

The ceremony received a special significance in view of the presence of representatives of foreign Governments, of members of the Public Health Training Commission, and of members of the Health Committee of the League of Nations. It closed with a formal welcome in the name of the Polish Government to the eminent guests and to the representatives of the Rockefeller Foundation.

### *New Buildings.*

The picture of the School and Institute shows the buildings in juxtaposition. The new School, over which the assembly was conducted, is a large building excellently adapted for the various purposes which it is intended to serve, and a good beginning has been made in the equipment, whose deficiencies were noted by Dr. Wroczynski. The building is on five floors with a basement. The top floor is reserved for the residential accommodation of the staff; the third floor is devoted to the chemical laboratory and chemical class-rooms; the second contains the grand amphitheatre and various lecture-rooms; the first floor is devoted to a museum of hygiene, in which exhibits relating to industrial hygiene and occupational physiology are included. On the ground floor are placed the students' bacteriological laboratory and class-rooms, and in the basement, in addition to the various electrical and other installations, there are a dining-room for the staff and the additional amenities.

Visits were also paid to two model sanitary districts, one urban and one rural, and the general opinion of the representatives of other countries present at the function was one of high approval of the energy and comprehensiveness displayed in the construction of the buildings and in the ideals of work.

## MEDICINE AND THE LAW.

### *Time-limits in Actions of Negligence against Hospital Doctors.*

THE legal point left outstanding in the case of Venn *v.* Todesco and Elder has been decided in Mrs. Venn's favour. At two previous trials the jury disagreed over the charges of negligence in diagnosis which she brought against the two doctors who are the defendants. The way is now open for her to proceed to yet a third trial if she is not deterred by the strong personal opinions expressed by Mr. Justice McCardie [1] as to the inadequacy of the grounds of those charges. The defence was a denial of negligence and a reliance upon the Public Authorities Protection Act of 1893. The points of law now decided were twofold. First the plaintiff contended that Dr. Todesco and Dr. Elder could not rely upon the Act at the second trial last February because they had voluntarily abandoned that line of defence at the first trial last June. The judge was against the plaintiff here. He said the February proceedings were a trial de novo and the defendants were not precluded from pleading the Act. The second point was more complicated. Mrs. Venn's husband was in the Croydon Borough Hospital at the period when the alleged negligence of the two defendants occurred. Dr. Todesco was resident medical superintendent of the hospital, and Dr. Elder was assistant resident medical officer. Mr. Venn left the hospital and passed out of their care on April 26th, 1922. If the Public Authorities Protection Act, 1893, applied, then Drs. Todesco and Elder could not be sued unless the writ was issued within six months of that date—i.e., before Oct. 26th, 1922. The action was, in fact, begun (by the issue of a writ) on Dec. 6th of that year—after the time-limit had elapsed. But there is another Act, Lord Campbell's Act of 1846, which gives widows certain rights of action on the death of their husbands provided that they sue within 12 months of the death. Mr. Justice McCardie, in the face of a network of legal decisions which only the House of Lords would have power to overrule, has felt obliged to decide that Lord Campbell's Act applies to the exclusion of the Public Authorities Protection Act, and therefore Mrs. Venn's action, begun within 12 months of her husband's death, was not time-barred.

The learned judge hardly disguises his view that, as a general principle of statutory interpretation, there is no reason why the two Acts should not be construed together, in which case the defendants would have been able to protect themselves by means of the narrower time-limit of six months under the Act of 1893. And on general considerations he points out that his ruling may be unfair to persons in the position of Drs. Todesco and Elder. If the 1893 Act does not operate where death has occurred, if the time-limit in such cases is fixed only by Lord Campbell's Act, what follows? A man may be injured by alleged negligence and may not die till many years afterwards. His widow will then have a further 12 months in which to issue her writ. Thus the unfortunate defendant will be seriously prejudiced by the passage of years in meeting the case and dispelling the allegations made against him. This prejudice, due to lapse of time, is the very evil which the Act of 1893 was designed to prevent. It is to be hoped that the House of Lords may have an early opportunity of reversing the decisions by which Mr. Justice McCardie as a judge of the High Court was bound, and of assuring to the medical officers of hospitals the protection which Parliament presumably intended them to enjoy.

### *The Harnett Case: Dr. Fisher Wins.*

In Harnett *v.* Fisher the defendant doctor has succeeded upon the legal point, though the jury had found—as stated in this column last week—that the plaintiff had been sane in November, 1912 (when Dr. Fisher certified him), and that Dr. Fisher had not used reasonable care in certifying him. Dr. Fisher was able to plead the Statute of Limitations, an Act of James I., which bars out claims of this kind unless they are brought within six months of the date when the cause of action arose. Section 7 of the Act is a proviso that, where a plaintiff has been an infant or *non compos mentis* at the time when the alleged breach of duty towards him occurred, the period shall not begin to run until he comes of age or becomes sane. This would have helped Mr. Harnett if he had been *non compos mentis* when Dr. Fisher examined him in 1912, but the jury has decided that he was sane at that date, and by this finding in his favour they have deprived him of his extension of time for suing. It had been argued for the plaintiff that a man who has been shut up in a lunatic asylum must have the rights of a lunatic under the proviso to Section 7 of the Statute of Limitations. This the judge could not accept, as the plaintiff could not be simultaneously sane for one purpose and insane for another. Mr. Justice Horridge was impressed by the hardship to Mr. Harnett. Others will not forget that a doctor who is sued in 1926 for an incident which occurred in 1912 is at a grave disadvantage in defending himself. Dr. Fisher's case was conducted for him throughout by the London and Counties Medical Protection Society.

### *A Flaw in the Children Act.*

The Children Act of 1908 gave new powers of removing children from the custody and control of undesirable parents, but these powers do not go far enough. A serious omission is disclosed by a recent prosecution at the Hertfordshire Quarter Sessions, where a father pleaded guilty to three counts charging him with indecently assaulting his own daughter, aged 14 After he had been sentenced (to nine months imprisonment with hard labour), the court made an order—presumably under Section 21 of the Act—giving the custody of the child to her uncle and aunt until she reaches the age of 16 But there is another younger daughter, aged 8, in respect of whom there was no charge against the father, but of whom the father hardly seems a suitable person to have custody, the mother having died some years ago As the law stands, when the father is released at the end of his sentence he will be legally entitled to demand custody of this younger child Questions have been asked in Parliament of the Home Secretary, who replies that steps have been taken for the protection of the younger daughter, but that there is admittedly a defect in the Act The position is partially dealt with in paragraph 99 of the report of the Departmental Committee on Sexual Offences against Young Persons (Cmd 2561) The Committee there recommends that incest should be inserted among the offences enumerated in the first schedule of the Children Act; this would allow magistrates to take all the means provided by the Act for the protection of the girl victim if under 16 and to make maintenance orders In the interests of the girl's sisters the report goes on to recommend that machinery should be devised (in cases like that which was recently heard before the Hertfordshire sessions) to refer the circumstances of the girl and her sisters to a petty sessional court so that action may be taken for the guardianship of them all, due regard being had to the rights of the mother Not much has yet been done to give legislative effect to the Committee's recommendations.

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[1] THE LANCET, March 13th, p. 560.

### *Abnormal Conduct and the Inference of Insanity*

In the proceedings just mentioned counsel for the defence asked the Bench to consider the medical aspects of the case, and expressed the hope that the day was not far distant when a man like the accused would be put in a hospital ward instead of a prison cell This was said by way of plea in mitigation of sentence; insanity was not raised as a defence The Bench does not seem to have paid special attention to the plea, but, just before Easter, there was a somewhat unusual case in which the Court of Criminal Appeal went out of its way to infer insanity from the abnormality of the accused person's behaviour At a criminal trial at the Cornish assizes it appeared that a man had induced a firm of solicitors to draw up a will under which his nephew left him his money. He then forged his nephew's signature and formed, as it seems, a plan to bring the will into operation He borrowed his nephew's gun and he lay in wait in his nephew's garden, watching for his nephew to come out of the house. Unaware of their danger, the nephew's wife and maidservant came out and were shot at one being injured slightly, the other seriously Eventually the accused was apprehended and put upon his trial. He was sentenced to 14 years' penal servitude at the assizes, but the Court of Criminal Appeal reduced the sentence to one year's imprisonment The appeal was not very fully reported, but it appears to have been thought that the facts indicated insanity and that the court below had not given sufficient attention to this aspect of the man's conduct. It is believed that counsel for the defence at the assizes did, in his address to the jury, dwell upon the indications of insanity, but counsel's speeches are the only part of the trial which is not officially reported on the shorthand notes; consequently, they do not appear on the dossier of documents which is presented to the Court of Appeal. That court presumably felt that it had not the power or the justification to change the verdict into one of acquittal on the ground of insanity. In the absence of further information it seems a strange result, for, if a man is insane enough to make it proper to cut his sentence down from 14 years to one year, then even the one year's imprisonment seems a year too many, and one would expect to see him treated as a criminal lunatic. And if the judges found this strong inference of insanity in the mere recital of the prisoner's strange behaviour, and if they partly acted upon the inference unassisted by mental experts' evidence, is this not one of those cases which suggest that a trained alienist would be exceedingly useful if called in to act as examiner and assessor to the Court of Criminal Appeal?

The Home Secretary has withdrawn from Dr. Samuel Grahame Connor, of 21, Dryden Chambers, Oxford street, London, the authorisations granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and supply raw opium and the drugs to which Part III of the Act applies.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg Rear-Admiral E. Sutton succeeds Surg Rear-Admiral C. M. Beadnell at the Royal Naval Hospital at Chatham; and Surg. Rear-Admiral D W Hewitt succeeds Surg Rear Admiral A. Maclean at the Royal Naval Hospital, Haslar

## ROYAL ARMY MEDICAL CORPS

W D Dyson and J R. Stokes to be temp Lts.

### TERRITORIAL ARMY

Capt J E. Rusby (R.A.M C. Res. of Off ) to be Capt.
Capt. W J Hirst resigns his commn. and retains his rank.
Capt. H B Dodwell (late R.A.M C., Spec. Res.) to be Capt
Lt A. Swindale (late R.C of Signals, T.A.) to be Lt.
Lt. W T de Vere Thomson (late R.G.A., T.F ) to be Lt

## ROYAL AIR FORCE.

No 602 City of Glasgow (Bombing) Squadron: J C.H Allan to be Flight Lt.

## INDIAN MEDICAL SERVICE.

Majs. Khandu Ganpatrao Gharpurey, D C. V FitzGerald, B Higham, S. T Crump, and J MacG Skinner to be Lt.-Cols.

Capts. Kotyvenkata Rama Rao, Hari Chand, Nehchal Das Puri, Monindranath Das, Jagannath Balkrishna Vaidya, J M. R Hennessy, C. H N Baker, M L. Treston, Amir Chand, R. Lee, and C de C Martin to be Majs.

The King has approved the retirement of Lt.-Col. W. J Collinson and Maj R. B Nicholson.

Colonel F H. G Hutchinson, A D M S. of the United Provinces District, will succeed Major-General T H. Symons as Surgeon General with the Madras Government. Lieut Colonel R. Row, O B E., has been appointed Professor of Morbid Anatomy and Curator of the Museum Grant Medical College Major J D Sands, professor of medicine Medical College, and first physician College Hospital, officiates as Principal of the College. Major A. W Truter has handed over charge of Central Jail, Montgomery, to Captain N D Puri Dr O C. Vardon officiates as Director of the Pasteur Institute, vice Lieut -Colonel Hodgson. Dr M. Stowe has been appointed to the Agra Women's Medical School, vice Dr N E. Trouton transferred. Dr R J L. Sladen, district surgeon G I P Railway, has been appointed Chief Medical Officer, Eastern Bengal Railway, vice Dr T. H Bishop, granted leave Dr K W. Blinkworth has been appointed Civil Surgeon, Garo Hills, Assam. Major W O Walker, civil surgeon, Serampore, has been appointed Civil Surgeon of Hooghly Dr J F C. Rose Meyer has been appointed Resident Medical Officer, European Civil Hospital at Allahabad, vice Dr H. P Burns transferred. The following have been granted leave: Lieut Colonel F A. F Barnardo, principal, Medical College, Calcutta; Captain G Shanks, professor of pathology, Medical College, Calcutta; Lieut.-Colonel E. C Hodgson, director, Pasteur Institute; Lieut.-Colonel W Lapsley, civil surgeon, Agra; Major A. E Mathews, civil surgeon, Hardoi; Dr T H Bishop, chief medical officer, Eastern Bengal Railway; Dr H. G H Munrowd, civil surgeon, Garo Hills; Lieut.-Colonel C A. Godson, civil surgeon, Hooghly.

## DEATHS IN THE SERVICES.

Fleet Surgeon Hugh Winckworth Macnamara, R.N , retd , who died on April 10th at Peppard, near Reading, at the age of 69, qualified with the M.R.C.S. Eng in 1880 and obtained the L.R.C.P Lond two years later In the following year he joined the Royal Navy and served as surgeon in various ships, including the *Surprise* in the Mediterranean, when the Duke of Edinburgh was Commander-in-Chief. In 1890 he was appointed to the *Excellent* gunnery school at Portsmouth, and later to the dockyard at Gibraltar, when in 1895 he was promoted to staff surgeon. In the meantime he had taken the D.P.H., *being one of the first*, possibly the first, naval medical officer to do so. He then joined the *Cordelia* in the West Indies, and in 1899–1901 was on the staff of the Chatham Hospital. In 1901 he was appointed P.M.O. to the *Ophir*, which conveyed the Prince and Princess of Wales, now the King and Queen, to India, and later served in China, being promoted Fleet-Surgeon in 1903. Other posts which he held were those of senior medical officer of the training ship *Impregnable* and of the *Royal Arthur* and *Euryalus*, flagships of Admiral Sir Day Hort Bosanquet in the West Indies, while he was also in medical charge of the R.M.L.I. at Portsmouth, and subsequently was afloat in the *King Alfred*, of the Home Fleet, at Devonport. In September, 1912, he joined the *Lion*, flagship of Rear-Admiral David Beatty, and retired in 1913.

Col. *Charles Arthur Johnston*, C.B., D.S.O., I.M.S. (*retd.*), who died in a nursing home in London on April 23rd in his sixtieth year from encephalitis lethargica, was the son of the late J. W. Johnston, of Rajahmundry, India, and was educated at Edinburgh University, where he graduated in medicine and surgery in 1888. He entered the Indian Medical Service in 1890. He served in Manipur in 1891 (medal with clasp), in the Burma campaign, 1891–92 (mentioned in dispatches and clasp), the Tirah Campaign, 1897–98 (medal with clasp), and in China in 1900 (medal). During the war he served in East Africa in various capacities and was several times mentioned in dispatches, and awarded the C.B., Military Division, and D.S.O. in 1917. He was severely injured during the campaign by being blown up on the railway. He was promoted to Major in 1902, to Lieut.-Colonel in 1910, and to Colonel in 1920. Colonel Johnson was a keen medical officer and rendered valuable service in connexion with the treatment of malaria. He was a popular officer throughout the Indian Army and married, in 1912, Isabel, elder daughter of the late Dr. J. H. Honeyman, of Auckland, New Zealand, and of Lady Bruce-Porter. He leaves a widow and one son.

The death on April 5th of Major George Pritchard Taylor, R.A.M.C., who was mauled by a tiger near Mhow while out duck shooting, is reported from Bombay. Major Taylor was appointed lieutenant in 1909 and captain in 1912.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 17TH, 1926.

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 213 (last week 190); scarlet fever, 1388; diphtheria, 893; enteric fever, 36; pneumonia, 1876; puerperal fever, 46; cerebro-spinal fever, 6; acute poliomyelitis, 2; encephalitis lethargica, 64; dysentery, 13; ophthalmia neonatorum, 112. There were no cases of cholera, plague, or typhus fever notified during the week.

Of the 213 cases of small-pox 103 were notified from the county of Durham, scattered over 20 or more boroughs and urban districts, while cases were reported from all except two of the nine rural districts, the areas most affected being Chester-le-Street, Easington, Houghton-le-Spring, and (especially) Lanchester. From the county of Derby 46 cases were reported, all except three from Derby C.B. itself. A second case has been reported from the county of Lincoln, Gainsborough being the new centre; the remaining cases as before from the counties of Northumberland, Nottingham, and Yorks, West Riding.

*Deaths.*—In the aggregate of great towns, including London, there was 1 (0) death from enteric fever, 99 (43) from measles, 9 (3) from scarlet fever, 59 (4) from whooping-cough, 41 (13) from diphtheria, 66 (11) from diarrhœa and enteritis under 2 years of age, and 302 (59) from influenza. The figures in parentheses are those for London itself. The notified deaths from influenza for the 105 great towns are only eight in excess of those of the previous week, London itself showing a substantial diminution from 74 to 59. The number of measles deaths has just failed to reach 100.

INFLUENZA IN SCOTLAND.—In the Registrar-General's weekly return for the week ending April 17th the deaths from influenza in the principal towns of Scotland numbered 84, being 31 fewer than in the previous week. In Glasgow the recorded deaths from influenza numbered 45 (including cases where influenza was a contributing cause of death), and from all respiratory diseases (not tuberculous) 184.

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Dr. J. Hall-Edwards, of Birmingham, who has lost one hand and several fingers of the other as a result of dermatitis due to work with X rays, has been elected an honorary life member of the British Medical Association.

# Correspondence.

"Audi alteram partem."

## MINERS' NYSTAGMUS: A TENTATIVE THEORY.

*To the Editor of* THE LANCET.

SIR,—The suggestion of Dr. J. Prosser Davies as to the origin of miners' nystagmus contained in your issue of April 24th is certainly ingenious, all the more so that interference with the vestibular nerve may produce nystagmus. At the same time whole areas and, indeed, whole countries are free of the disease. Are we to infer that in these areas and countries the engine-drivers are all very cautious and careful men and that in the districts where the disease abounds they are all somewhat reckless?

To my mind the disease is due to a poison of some kind. Dr. Robson suggests that it is due to carbon monoxide inhalation. There is something to be said for that view, but, personally, I regard it as due to some toxin. In its paroxysmal characters it shows some similarity to ague and in other features it reminds me of encephalitis lethargica.

I am, Sir, yours faithfully,

Glasgow, April 24th, 1926. FREELAND FERGUS.

## X RAYS IN CANCER.

*To the Editor of* THE LANCET.

SIR,—Most surgeons in this country will be surprised to read Dr. Reginald Morton's letter (THE LANCET, April 17th) in regard to their views and prejudices and to learn that they have taken no very serious notice of what has been going on at the Erlangen clinic for some years past. And they will, I think, be interested to learn that a "fair and honest" trial of the Erlangen technique in place of operating would alter the lot of the patients suffering from cancer for the better, "mentally, physically, and materially." There are many surgeons far better fitted to reply to these criticisms than myself. But it so happens that on March 30th I had the honour of delivering the ninth Silvanus Thompson lecture before the Röntgen Society, and I took for discussion my experience of the treatment of growths of the urinary organs with the hard X rays. And it further happens that I have had the privilege of Dr. Morton's assistance in treating a number of cases of malignant disease of the urinary organs with the Erlangen technique.

The use of the hard rays in cancer has been for some time under careful trial in this country. If all the cases that are seen in the early stage have not been turned over to the radiologist the reason is that good results are obtained by operation in early cases, whereas the result of treatment by the hard X rays in such cases has not come up to the extravagant claims made for it in some quarters. In my experience the results of operation for, say, carcinoma of the bladder, are good in regard to immediate and remote results and are steadily improving as early diagnosis becomes more common. Dr. Morton's statement that surgery in malignant disease is at a "dead end" is, so far as my experience is concerned, quite inaccurate. Further, Dr. Morton claims for radiology that it is without the risks of operation. This is simply not true. There are many serious risks connected with the use of the hard rays, and of these Dr. Morton must be perfectly aware.

Dr. Morton claims for himself "a high degree of success in the relatively few early cases of malignant disease that have been referred to me before there had been any surgical interference." This brings me to a second point. I submitted ten cases of malignant growth to Dr. Morton for treatment by the hard X rays. None of these cases had been operated upon; eight were early cases in good and even robust health, and with a small or moderate-sized circumscribed local growth. Two were advanced cases. Nine of these patients are dead (one from cause apart from the cancer) [illegible] and one is alive without any recurrence. The final result of these cases must surely have been overlooked by Dr. [illegible] in making the claims embodied in his letter.

I do not wish to give the impression that I am antagonistic to the use of X rays in cancer. The reverse is the fact, and my [illegible] Thompson lecture is evidence of this. But I feel most strongly that Dr. [illegible]'s statements in regard to surgical results are misleading, and that his claim as to the results of the Erlangen technique is extravagant.

I am, Sir, yours faithfully,
John Thomson-Walker.

[illegible], W., April [illegible], 1926.

## EARLY PROGNOSIS IN CANCER AND TUBERCULOUS DISEASE.

*To the Editor of* THE LANCET.

Sir,—In these diseases the general practitioner has to answer the natural anxiety of the patient and of the immediate relations and friends; this anxiety takes the form of inquiry as to the chances of a permanent cure. Long experience teaches that what is told in "utmost confidence" to a relation or friend sooner or later leaks round the entire family, and so it becomes a matter of self protection to maintain continuity of opinion when trying to give real help to people in distress.

The general intelligence of the public in the matter of disease is far in advance of, say, 20 years ago. In putting a question requiring an opinion they are not to be put off with an answer devoid of "yea" or "nay," nor with a quotation from long-worded reports of the bacteriologist, pathologist, or radiologist; it will not unload the responsibility for an opinion from the practitioner in attendance.

We "G.P.'s" are not in the happy position of the medical or surgical specialist hidden away in the impersonality of a consulting-room; we are on the ground every day to minister to the latest mental or physical requirement. I suggest the following as a good working basis for prognosis; I am leaving out the obviously hopeless cases, applying it only to those who look well and who the uninformed think only "out of sorts."

The subject first gains knowledge of anything wrong by a hæmorrhage from the lung or vagina, or the discovery of a small tumour in the breast or neck, or possibly abdomen. He or she is reported "out of sorts and avoids people." The two early symptoms forming an unfavourable prognosis are: (1) a continuously increased pulse-rate; (2) an altered mentality, taking usually the form of secretiveness.

1. *Increased Pulse-rate.*—Here I exclude Graves's disease and primary endocardial trouble, but I do not exclude anæmia, often the first symptom of tuberculous disease in the lungs, or pleura, or of a "silent" malignant growth. This increased pulse-rate is of ill omen if it is out of proportion to the temperature of a problematical pulmonary tuberculous infection. When I say it is "problematical" that the lung has become *involved*, it is because many early cases lack the usual physical signs, the stethoscope failing to find a small deposit *in the centre of a lobe of the lung*; happily the hyperæsthesia of an intercostal nerve is an unfailing signpost, and explains the increased pulse-rate.

*Illustrative Cases.*—A woman, aged 31, consulted me about a tumour. It was the size of a large walnut, situated in the upper and inner quadrant of the left breast; there was no other *evidence of disease*; pulse-rate 80–90, temp. subnormal, and *continued so* morning and evening *for* seven days before operation. I excised the breast and subcutaneous tissues and muscles from the axilla to below the costal margin, and the pathological report was duct carcinoma. *In answer to the usual question from the friends I gave a bad prognosis.* The increased pulse-rate continued until my patient died *within 12 months of cancer in the region of the stomach.* This is typical of many cases that [illegible].

[illegible]

A woman had a cancer of the breast removed [illegible] months [illegible].

The pulse-rate of [illegible] from 80 to 90, [illegible].

2. The Mentality of the patient [illegible]; it is equally helpful with the pulse-rate in suggesting a good or bad prognosis. Dealing [illegible], my observations over a period of 25 years lead me to distinctly believe that in tuberculous and [illegible] disease, where there is a distinctly altered mentality, however slight, a bad outlook [illegible]. The friends of the patient will describe this condition in various ways—"not the same," "funny in her ways of late," "odd," "not so open as she used to be." The sum total of all this can be covered by the word secretiveness. When an ordinary individual gradually alters the usual mode of dealing with friends and becomes "peculiar" in small matters—just very reticent or reserved, but not spiteful or malicious, and displaying no hallucinations—then search for a blood infection cause.

3. The individual with altered mental condition avoids a consultation with a doctor even when the latter is an old friend.

*Illustrative Cases.*—A deep ulcer in the breast of an old lady was discharging foul-smelling pus, but her husband and maid knew nothing about it until she sent for me, so that I could sign her death certificate. The employer of an elderly butler asked me to see him as the butler had "[illegible] smell." I found a large fungating growth of the anus, but as in the former case, no one in the house had any knowledge of the condition or had heard any complaint. In a case of slight melancholia the patient had "pain in the back," when aspiration in the region of the right sacro-iliac joint found pus teeming with [illegible]. Once I was called to see a delicate looking woman who had cut her throat. She had a tuberculous deposit at the left apex, which was unknown and untreated, and she died a few weeks after the attempt at suicide from general tuberculous infection.

Early cases are missed over and over again because the modern practitioner is not taught that clinical observation is the first line of knowledge, the help of the various specialists being the second, and "team work" is not available in scattered country districts. The practitioner having no "team" at his command, his usefulness and success depend upon his skill as a clinician, and the good clinician notices small symptoms. With him the chronic cough leads to an examination of the middle ear; the *type of pain* in the sole of the foot calls for an examination of the sacral plexus via the rectum; a persistent pain over the occiput calls for a digital examination for a tender area in the maxilla, and later an X ray to prove the clinical belief that there is a buried end of a tooth.

4. I quote such cases to show that the clinician can and must be *self-dependent*; such dependency is strengthened and encouraged by reading the inspiring article in THE LANCET of last week by Mr. Hastings Gilford on "A Method of Cancer Research." The true clinician must try and know all that is to be known. *Again and again he has to ask for proof of his findings from the bacteriological and biochemical laboratories; he is a partner in research work.*

A persistent increased pulse-rate and a slightly *altered mentality I have found* important signposts in early tuberculous and cancerous infections. Marcus Aurelius said: "*He who does (I says) nothing makes no blunders.*" He evidently had forgotten the medical practitioner.

I am, Sir, yours faithfully,
W. H. [illegible], M.D.
Consulting Surgeon, [illegible] Hospital.

Dorchester, April 26th, 1926.

# Obituary.

## JOHN ALFRED KNOWLES RENSHAW, M.D. CAMB.

THE death of Dr. Knowles Renshaw, which occurred at his home at Sale on April 25th, came unexpectedly, although for some time he had suffered from heart trouble. Dr. Renshaw belonged to a family of doctors which has made its home in the Altrincham and Sale district. At one time there were 12 Renshaws whose names appeared in the Medical Directory, and they all belonged to this family and lived within four miles of the house where Dr. Knowles Renshaw lived. With his grandfather, Jeremiah Renshaw, who qualified in 1833, and his father, Charles Jeremiah Renshaw, he kept up the succession for nearly 100 years. He received his medical education at Cambridge, Manchester, the London Hospital, and Vienna, and qualified in 1895. After graduating in medicine at Cambridge in 1896 he became house surgeon at the Manchester Royal Infirmary and later went into general practice in his own district of Sale. Gradually, however, he devoted himself more and more to aural and laryngeal work, and in the end he specialised exclusively in it. His chief public work was on the staff of the Manchester Consumption Hospital and of the Crossley Sanatorium. Always friendly and helpful, and certainly without any enemies, Dr. Renshaw leaves a gap which will be hard to fill, and Manchester is the poorer for the loss of his genial presence. The greeting received a few days before his death from Cambridge medical men assembled at their annual dinner gave him special pleasure. He leaves a wife and children.

## FREDERICK STEPHEN PALMER, M.D. DURH., F.R.C.P. LOND.

THE death of Dr. F. S. Palmer on April 21st removes a physician of ability whose career was unusual in the profession.

The son of a practitioner at East Sheen, Surrey, Frederick Palmer received his medical education at Westminster Hospital and became M.R.C.S. and L.S.A. as long ago as 1869. After holding the post of house surgeon at Westminster Hospital, he was for four years resident medical officer at the Radcliffe Infirmary, Oxford; having thus equipped himself for his life's work, he settled down at East Sheen like his father before him. Here he carried on for many years a very successful general practice. Amongst his patients were the ex-Royal Family of France, and he was on friendly terms with the late Comte de Paris. In 1885 he graduated as M.D. at the University of Durham, and in 1901, 32 years after qualification, he left his practice in Surrey, settled in London, and successfully sat for the examination for Membership of the Royal College of Physicians. As clinical assistant at the Hospital for Sick Children, Great Ormond-street, and at the National Hospital, Queen-square, he acquired further experience, and such were his energy and determination that he was able to establish himself as a consulting physician and neurologist. In 1904 he was elected physician to the West End Hospital for Nervous Diseases, where he rendered excellent service for many years both in his clinic and as chairman of the committee of management. He was at the disposal of everyone whom he could help and his skill and sympathy ensured that these were many. During the war his energy and business acumen made him invaluable to the hospital, and it was not until 1921 that he joined the consulting staff, the age of retirement having been postponed for him. For many years Dr. Palmer was also physician to the Hostel of St. Luke and to the Royal Society of Musicians, and his experience found expression in numerous contributions to medical journals. He was president of the West London Medico-Chirurgical Society, and in 1911 his successful work as a consultant led to his election as F.R.C.P. Lond.

The bare record of Dr. Palmer's life is evidence of courage and ability. To his personal charm and character his friends bear witness. "Dr. Palmer was a fine specimen of the courteous Christian gentleman with high ideals," writes a colleague, "and he retained his mental and physical vigour to the end."

Dr. Palmer leaves a wife, and a daughter married to Surgeon-Captain Campbell, R.N. (retd.).

## HENRY WICKLIFFE FISHER, L.R.C.P. EDIN.

THE death of Dr. H. W. Fisher on April 20th removes a general practitioner of high reputation in the Sefton Park district of Liverpool. Dr. Fisher was 60 years of age. Educated at University College, Liverpool, he took the conjoint Scottish diplomas in 1889 and settled in Sefton Park some 20 years ago. Early in his medical career he had the misfortune to suffer from serious deafness, but in spite of this affliction he continued undaunted with his work, so that his practice, instead of dwindling because of his disability, continued to increase. Acumen, energy, and devotion combined to make him a very valuable adviser, and those with whom he came into consultation testify to his diagnostic skill. His energy for work was irrepressible. Dr. Fisher was a keen cricketer and took a great interest in the local club. He is survived by his widow and a family of three.

THE LATE DR. D. T. BELDING.—Dr. Davy Turner Belding, who died on April 15th at the age of 62, had been medical officer of health to the East Dereham U.D.C. for the past 30 years. He was a son of the late Mr. Davy Turner Belding, of South Creake Hall. Receiving his medical education at St. Bartholomew's Hospital, he acted as prosector at the Royal College of Surgeons from 1886 to 1887, and qualified as M.R.C.S., L.R.C.P. in the following year. Then he returned to East Dereham and entered into partnership with Dr. H. C. Hastings, whose pupil he had earlier been and to whose practice he ultimately succeeded. During the war Dr. Belding, who was a Territorial officer, acted as A.D.M.S. to the East Anglian division and later served under the Eastern Command, eventually taking rank as brevet lieut.-colonel. He was a keen golfer, being at one time captain of the Royal Norwich Golf Club, and a prominent Freemason. He leaves a widow and daughter.

THE LATE DR. MAXWELL ROSS.—Until the end of last year Dr. James Maxwell Ross, who died on April 10th, was medical officer of health for the county of Dumfries. He was born in Ross-shire 72 years ago and graduated in Arts at the University of Edinburgh in 1876, proceeding to a degree in medicine in 1881. Two years afterwards he became F.R.C.S. Edin. and he also took the degree of B.Sc. in public health. In Edinburgh he acquired considerable experience of aural work and thoroughly qualified himself for his post as a medical officer of health. He was responsible for the sanitary administration of a number of towns and villages besides the county of Dumfries and carried out his duties with tact and sympathy. Dr. Ross's ability and knowledge were recognised by his appointment as examiner in public health to the Royal College of Surgeons of Edinburgh and as a member of one of the consultative councils of the Scottish Board of Health. He was also at one time President of the Society of Medical Officers of Health of Scotland and a member of the Council of the British Medical Association. Dr. Ross's wife died some years ago and his elder son, Dr. Dermid Ross, died in 1920. There is one surviving son.

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QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—Sir Samuel Scott, presiding at the annual meeting of governors and subscribers of Queen Charlotte's Maternity Hospital on April 26th, said that there were only 700 beds for maternity patients in the voluntary hospitals of London. More beds were urgently needed at Queen Charlotte's Hospital, which constantly had to refuse applicants owing to lack of accommodation. Last year nearly 2000 patients were admitted to the wards, and the committee was considering the addition of an operating theatre. An interesting fact had recently come to light regarding the foundation of the hospital. Dr. G. C. Peachey had discovered an old manuscript in the British Museum from which it was clear that the hospital was founded in the year 1739 and was thus the oldest maternity hospital in the United Kingdom. The hospital was still in debt to the extent of £0000, and contributions were urgently needed.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### THE MIDWIVES AND MATERNITY HOMES BILL.

THE Midwives and Maternity Homes Bill, a measure introduced by Lieut.-Colonel Fremantle and supported by the Government to amend the Midwives Acts, 1902 and 1918, and to provide for the registration of maternity homes and other purposes, was read a third time on April 27th. The Bill had been previously considered by Standing Committee A of the House of Commons, with Sir Richard Barnett in the chair, when important amendments were introduced.

#### *Elimination of the Handy Woman.*

Clause 1 provides that the following subsection shall be substituted for Section (2) of Section (1) of the Midwives Act, 1902 (relating to the certification of midwives):—

> "Any person not being certified under this Act who attends a woman in childbirth otherwise than under the direction and personal supervision of a duly qualified medical practitioner shall, unless that person satisfies the court that the attention was given in a case of sudden or urgent necessity, be liable on summary conviction to a fine not exceeding £10."

Sir Kingsley Wood (Parliamentary Secretary to the Ministry of Health) moved a drafting amendment to leave out the words "any person not being," and to substitute the words "if any person being either a male person or a woman not." The object, he said, was to make it perfectly clear that there should be no possibility of admitting any man to the Midwives Roll.

Dr. Vernon Davies asked how this would affect medical students who, as a part of their training, had to undertake a certain number of midwifery cases on their own and not under the supervision of a doctor from the hospital. In cases of necessity or difficulty such students could send to the hospital for skilled help.

Sir Kingsley Wood said he thought that such students would have to act as they had done hitherto, under the responsibility of the doctor who sent them.

Dr. Davies said they could not under this clause, because it said "Under the direction and personal supervision of a duly qualified medical practitioner." It might happen, if the case was a normal one, that a qualified doctor did not see the case from beginning to end.

Sir Kingsley Wood said they could discuss that when they came to the question of "personal supervision," but he wanted to make it clear so far as this part of the Bill was concerned, that they must not in any way, even by implication, suggest that there was anything like a male midwife. There had been certain cases, particularly in the county of Durham, in days gone by, where an undesirable practice had at any rate been in existence, and men had acted in these cases. They wanted to avoid that. He would give further consideration to the question of medical students if necessary.

Colonel Fremantle said he thought that the case was perfectly met under the Bill by the words "under the direction and personal supervision of a duly qualified medical practitioner," because in all the medical schools the attendance on women in childbirth was under the direction and supervision of a qualified medical officer of the hospital all through. As the clause was to be amended it would meet the case.

Major Hills had an amendment on the paper to substitute for "the personal supervision of a duly qualified medical practitioner," the words "in the presence of a duly qualified medical practitioner." As the Chairman ruled that this amendment would be cut out by the passing of Sir K. Wood's amendment he was allowed to discuss certain points in connexion with it along with the new subsection before the Committee.

Major Hills said that he objected to the words "personal supervision," as they were too vague, and it might be held that a doctor was in personal supervision of an uncertified woman if he had employed that woman and given her a general direction as to the conduct of the case. It is felt by the Central Midwives Board that these words were too uncertain, and, while it was admitted that in cases of emergency it might be necessary for an uncertified woman to act, it should not be the general practice that she should do so, except in the presence of a duly qualified doctor. He agreed that that proposal raised certain difficulties, one of which was that nobody could say exactly when a birth was going to take place, and it would, of course, make the clause much more stringent. Nevertheless, they wanted to prevent the practice of midwifery by unqualified women, and he was rather afraid that if the clause was left as it was in the Bill that they would admit the unqualified woman midwife. It might be the case that the clause in the Bill would be fulfilled if the doctor telephoned or talked to the uncertified woman.

Colonel Fremantle said that on behalf of the Central Midwives Board he had an amendment on the paper which was very similar to that of Major Hills. He thought that the Midwives Act worked extremely well, but even in his profession there were a few black sheep. There were undoubtedly cases where diehards of the medical profession, who had been used to working with certain handy women, continued to do so within the letter of the law. The question they had to deal with was the exceptions. He had put down a proposal that the handy woman should be allowed to practise only in the case of the personal attendance of the doctor, and that is an amendment which was suggested by the Central Midwives Board and other bodies who worked with them. When they were considering the actual working of this proposal he was asked at what stage in the confinement should the doctor be required. If they said during labour, that lasted sometimes 24 hours, sometimes 36 hours, and even 48 hours, and the doctor, in justice to his other patients, could not be expected to be present the whole time. On the other hand, if they said "actual delivery," then the doctor had to wait and wait. Of course, he had other pressing cases, and while he was away, and before he could get back, often the child was born. One other objection to his proposed amendment was that it would penalise the handy woman for the fault of the doctor. The medical man was the person who should be made primarily responsible in these cases. He would be prepared to withdraw his amendment if he could see that definite steps would be taken to induce the General Medical Council to regard the conduct of a medical man, in deliberately abstaining from being present in the case of childbirth, as infamous conduct. If the General Medical Council would tune up doctors to carry out the letter and spirit of this clause that was all that was required.

Mr. Rhys Davies said he was in favour of the amendment, but he failed to understand the meaning of what was stated about men doing midwifery, who were not qualified men. He wished to know how many there were of these unqualified men, and whether it was intended to rule out these men who were acting in confinements and who were not medical men. If so, were there sufficient women to do the work? He would not like to do anything to reduce the number of those who were doing this kind of work, whether they were men or women.

Sir Kingsley Wood said there had been a practice in certain parts of the country, which the Central Midwives Board had expressed themselves very strongly against, of men acting in cases of this kind without any experience or training such as that received by medical students and without any doctor behind them at all. At the back of a medical student there was always some medical man who must take the responsibility, but in the case of these unqualified men that was not the case. One of the reasons why the Government were supporting this Bill was that it was making for the time when unqualified persons, male or female, would be prevented from acting as midwives. But they could not achieve that object all at once, because they had not sufficient women at present to do the work. He thought the proposed new clause was a great step forward. The Act of 1902 simply laid down that—

> "From and after April 1st, 1910, no woman shall habitually and for gain attend a woman in childbirth otherwise than under the direction of a qualified medical practitioner."

The words "habitually and for gain," in practice had proved not particularly helpful, and people had been able to avoid the restrictive character of the clause by proving that it was an isolated case and that they were not habitually engaged. The words in the old Act which states simply, "under the direction of a qualified medical practitioner," were really very vague, and it might well be, as had been proved in several cases, that a man by being present simply at the beginning of a case would have strictly complied with the section, and that was the end of his responsibility. The new clause took the matter very much further, and anything about habitually practising was left out and, in order that there should be no quarrel over that particular matter, the clause said, "Under the direction and personal supervision of a duly qualified medical practitioner." He believed those words threw a much greater obligation on the woman who was attending these cases than on the medical man himself. Obviously, if this phrase had to be interpreted in the courts, it really meant taking over the whole responsibility and conduct of the case. It did not simply mean a direction on the telephone, because that might very well have taken place under the Act as it was at present. Personal supervision meant that a medical man had actually to take charge and the woman had to act under him. If they said "In the presence of," it would practically mean that the whole proceedings under this clause would be a dead letter, It would mean that the doctor would have to be present throughout the whole of the confinement to be absolutely safe, not only during labour, which, unfortunately, sometimes occupied a good deal of time. It was perfectly true that the Central Midwives Board did at one time favour the words "and in the presence of," but it had been pointed out to them where those words would lead them, and he understood that the Central Midwives Board were now content with the clause as on the paper. The Ministry of Health took the same view. Anxious as everyone was to bring about a better state of affairs, one often ruined a reform by going too far. It had been suggested to him that it would be useful if he could see whether the General Medical Council would do something in those cases, which, so far as his knowledge of medical practitioners was concerned, were very rare, where a medical man covered an unqualified woman and allowed her to proceed; and that the mere fact that he did so might be held to comply with this section. He thought that it was far better, as in a case of other professions, if the medical profession could itself bring about the necessary reform in a small number of cases. They might perhaps be able to take action in the case of a medical man who so far forgot his professional duty as to allow a woman to proceed in this way. He would undertake on behalf of the Ministry of Health to consult the General Medical Council to see whether something could be done in that direction.

After further discussion Sir KINGSLEY WOOD's amendment was agreed to, and Clause 1, as amended, was added to the Bill.

### *Fees to Suspended Midwives and Called-in Practitioners.*

Clause 2 of the Bill provides that:—

> (1) Where on an appeal to the Central Midwives Board by a midwife who has been suspended from practice by the local supervising authority it is shown to the satisfaction of the Board that the suspension was not due to any default on the part of the midwife, the Board shall (notwithstanding anything in Subsection (2) of Section 6 of the Midwives Act, 1918) direct the local supervising authority to pay to the midwife such sum by way of compensation as, having regard to the circumstances of the case, seems just to the Board, and the local supervising authority shall forthwith make a payment to the midwife in accordance with the direction.
>
> (2) Subsection (2) of Section 14 of the Midwives Act, 1918 (which imposes a condition on the payment of a fee to a medical practitioner called in to assist a midwife in case of emergency), shall have effect as though at the end thereof there were added the words "and shall submit his claim within two months from the date on which he was called in."
>
> (3) Subject to the sanction of the Minister of Health, a local supervising authority may make arrangements with any pregnant women in their area for the payment by such women to the authority, whether by instalments or not, of such sum as may be agreed to cover any liability which the authority may incur under Section 14 of the Midwives Act, 1918, in respect of fees payable to medical practitioners who may be called in by midwives in pursuance of that section, and Subsection (4) of that section shall not apply in the case of any woman who has entered into such an arrangement and has duly paid the agreed sum.

Sir KINGSLEY WOOD moved an amendment to leave out Subsection (1) and insert in its place the following:—

> (1) Where a midwife has been suspended from practice in order to prevent the spread of infection she shall, if she was not herself in default, be entitled to recover from the local supervising authority such amount by way of compensation for loss of practice as is reasonable in the circumstances of the case.
>
> In Subsection (2) of Section 6 of the Midwives Act, 1918, the words from "or where" to "infection" shall be repealed.

He said that in the great majority of cases the local supervising authorities had paid this compensation, but there had been a few cases where they had declined to do so. It was obviously unfair that a certain number of midwives should not get any compensation while their colleagues in other parts of the country did receive it. This clause made the matter obligatory and brought about uniformity in practice on this matter. The alteration in the Bill, as drafted, was to bring the Bill into conformity with the original Act, which did not admit of an appeal to the Central Midwives Board.

Dr. VERNON DAVIES said he thought the main idea of the Bill was to prevent the spread of infection. It was not always easy to decide whether a midwife was really at fault or not. It was sometimes extremely difficult to prove and it was worthy of consideration whether they should not leave out the words "that she was not herself in default," and say that all cases which were suspended should receive compensation. A midwife might attend a confinement and it might go wrong and there might be puerperal fever. Possibly—almost certainly—that woman was responsible, but they could not be quite certain. It was held by some authorities that women could get autogenous infection, and in that case they might be penalising the midwife. He said, therefore, that they should pay them all.

Sir KINGSLEY WOOD said he did not quite go so far as that. If the midwife was in default they could not ask a local authority to pay her the money, but if, on the other hand, it was purely due to a spread of infection, his clause secured for the first time that a local authority should be liable to pay such amount of compensation as was reasonable.

The amendment was agreed to, and Clause 2, as amended, was added to the Bill.

### *The Midwives Roll.*

Sir KINGSLEY WOOD moved to leave out Clause 3, which deals with the fee for the retention of names on the roll of midwives.

He said that the clause, as it stood, sought to impose upon the midwives an annual fee of 2*s.* 6*d.* and its real object was to keep the Midwives Roll up to date. There had been a great deal of difficulty about the roll. It had to be published annually and it contained at present some 70,000 names, but there were really only about 14,000 persons actively pursuing their profession. The names of the people who were really engaged in this work were supplied from year to year by the local authorities under whom they were acting, and they were the people who were really doing the work and whose names ought from time to time, at any rate, to be published. One could understand the desire of people who were administering this Act to have the roll kept up to date, and to eliminate, if possible, from it people who had dropped out, and at the same time to avoid expense, but this particular clause on the paper had been rather strongly objected to by a number of midwives who were not perhaps in very flourishing circumstances, and who were not very anxious to pay this half-a-crown every year. Secondly, there was an objection from the administrative point of view, and that was that it would mean a communication to each of these 70,000 persons every year in order to collect the money. Therefore, under the circumstances, they thought that the best way of dealing with the situation would be to have a new clause which the Committee would discuss at a later stage.

The clause was negatived.

Sir KINGSLEY WOOD moved to leave out Clause 4 of the Bill, which, he said, was no longer necessary. The clause was negatived.

### *Maternity Homes: the Administering Authority.*

Clause 5 of the Bill deals with the registration of maternity homes, and provides as follows:—

> (1) Any person who on or after the appointed day carries on a maternity home within the meaning of this Act shall, unless that person is registered in respect of that home, be guilty of an offence against this part of this Act, and shall be liable on conviction to a fine not exceeding £50 or, in the case of a second or subsequent offence, to imprisonment not exceeding three months either in lieu of or in addition to any such fine.
>
> (2) Application for registration shall be made to the local supervising authority in writing in the form prescribed by the Minister of Health, and shall be accompanied by a fee of 5*s.* All fees received by a local supervising authority under this section shall be paid into the county fund or the borough fund as the case may be.
>
> (3) Subject as hereinafter provided, the local supervising authority on the receipt of an application for registration shall register the applicant in respect of the maternity home named in the application:
>
> Provided that the authority may refuse to register the applicant if they are satisfied (*a*) that the applicant or any person employed by the applicant at the home is not a fit person, whether by reason of age or otherwise, to carry on or to be employed at a maternity home; or (*b*) that for reasons connected with situation, construction, accommodation, staffing or equipment, the home or any premises used in connexion therewith are not fit to be used for a maternity home, or that the home or the premises are used or to be used for purposes which are in any way improper or undesirable in the case of a maternity home.

Sir D. NEWTON moved an amendment to secure that the councils of non-county boroughs and urban districts should be established as the authority to administer the Midwives and Maternity Homes Bill in their areas. The whole question of the administration and regulation of midwifery and child welfare and the question of registration of maternity homes and matters of that kind was now dealt with under three statutes. There was the Midwives Act of 1902, the Midwives Act of 1918, and the Maternity and Child Welfare Act of 1918. This Bill would, of course, strengthen those Acts which were already on the statute book. The Midwives Acts of 1902 and 1918 were administered by the county council, and originally under the Midwives Act of 1902 the county council was authorised and empowered to delegate its powers to other local authorities within its area, but under the Act of 1918 those powers of delegation were withdrawn in respect of authorities to whom those powers had not then been delegated. As matters now stood there was no power of delegation on the part of the county council or the county borough in regard to these powers under the Midwives Acts of 1902 and 1918, and in regard to maternity and child welfare. Under the provisions of the 1918 Act, the Ministry of Health was definitely charged with the duty of determining which authority should administer the Act. The Ministry of Health had been given discretionary power to decide whether the Act should be administered through the county council or through a non-county borough council, or an urban district council. He understood that already through the exercise of these powers the Ministry of Health had authorised no less than 261 borough councils and non-county boroughs and rural and urban district authorities to carry out the provisions of the Maternity and Child Welfare Act. That was to say, within the area of 43 county councils the Ministry of Health had authorised 261 other councils to administer the Maternity and Child Welfare Act. He thought that indicated clearly that the view of many county councils was that the question of maternity and child welfare could best be administered by non-county boroughs and urban and rural district councils. It might be that there was a fear of overlapping, because even now there was a certain amount of it in regard to midwifery and the administration of child welfare and maternity laws. In urging that these powers under this Bill should be given to non-county boroughs in cases where they already administered the Maternity and Child Welfare Act he would like to point out that this question was one which was interlocked with the general question of health administration. These authorities were well qualified and well fitted to carry out the duties which would arise under this Bill. The registration of these homes was not really just a formal matter, but a matter which needed to be very carefully carried out. The registering authority had to see that the applicant was a fit and proper person to carry on a home, and here again he suggested that the local authority, fully conversant with all the local conditions, was the most sympathetic and the most suitable body to hear the applicant and to consider her side of the case. It was clear that the enforcement of by-laws dealing with the question could really be dealt with best by the local authorities on the spot, rather than by the major body, the county council.

Sir KINGSLEY WOOD, in opposing the amendment, said that the local supervising authorities under the Midwives Acts were the county councils and the county borough councils. For the first time they were proposing that there should be registration of maternity homes—a reform which Members of all parties had long desired and which he hoped we should be able to secure as a result of this Bill. Part 2 of the Bill said that the registration should be made by the local supervising authority, and under the terms of the measure, as at present drafted, the supervising authorities had very important duties to perform. They had to see that the applicant, or any person employed by the applicant at the home was a fit person, and they had to inspect and see that the situation, construction, accommodation, staffing—he particularly emphasised the word staffing—and equipment of the home was right and proper, so that people who went there should receive proper treatment. Obviously while he did not wish for a moment to minimise the work which had been done by the minor authorities of the country in regard to maternity and child welfare work, the people who must administer the registration of these homes, and carry out the supervision of them, were the very people who were acting under Part 1 and supervised the midwives of the country. They had already got under the county councils and the county borough councils the necessary machinery for the purpose. The Minister of Health attached the greatest importance to this amendment being defeated. He regarded this as a critical clause in the Bill, and the Government could not say how far they would be able to support the measure if this clause was carried. In 1918 the legislature actually took away from the authorities the power to delegate which was given them in 1902. This was done because the power of delegation had not been generally exercised, and in a few cases in which it had taken place it acted detrimentally to the administration of the Act and introduced elements of confusion and uncertainty. In conclusion, he was authorised to say to the Committee that the Central Midwives Board, who ought to know all about this work and who had long been anxious for this reform and who had had more experience than any people in this country of this work, and who were an impartial-minded Board, were very anxious that the provisions in this Bill as it appeared before the Committee should be maintained and that this further element of other local authorities should not be introduced because they believed that it would not only be more wasteful, but that it would introduce elements of confusion and uncertainty into the administration. For all these reasons he thought the Committee would be well advised to negative the amendment.

Mr. TREVELYAN THOMSON said the amendment had been put down on behalf of the Municipal Corporations Association and the District Councils' Association, and they were disappointed at the attitude of the Parliamentary Secretary to the Ministry of Health. There was bound to be a certain amount of overlapping whatever procedure was followed. There were 261 local authorities which had maternity and child welfare committees. What was their position if they had maternity hospitals? They would then have two authorities controlling maternity hospitals in one area. That would produce not only inefficiency, but extra cost. Surely the Maternity and Child Welfare Act had shown that the local authorities had efficiently administered its provisions, and as maternity homes were so closely connected with infant welfare, surely the two matters should be under one authority.

Mr. ARTHUR GREENWOOD said that he thought those who supported the amendment were under a misapprehension. Clause 5 really ought to be read in connexion with Clause 10 because the latter clause laid down perfectly clearly that the expression "maternity homes" in the Bill did not include hospitals or other premises maintained by local authorities. These proposals rather applied to those areas and local authorities which up to the present had not been sufficiently progressive to have their own maternity homes. He could not find it in his heart to have very much sympathy with them, and he was not at all sure that they should not be superseded by some larger authority. He suggested that the difficulty might be met by including authorities over a certain size. He should like to know (1) whether local authorities which now controlled maternity homes would not really be affected; and (2) whether they could extend their maternity homes provision and remain outside the scope of the Bill? If that were so he thought they had reduced the problem to very small dimensions.

Captain MACMILLAN said if the Government would give a guarantee that they would resist any amendments to Clause 10, when that stage was reached, which would tend to take away the rights of the local authorities for whom he was speaking—the larger boroughs without county borough powers—then, although he was in favour of the general principle of the amendment, he would be prepared to accept the Bill as it stood.

Major HILLS said that he had always favoured the larger authority and had intended to vote against the amendment, but he had been struck with the speeches of Captain MACMILLAN and Mr. GREENWOOD, who had pointed out that Clause 10, as drawn, would give a reasonable compromise between those who supported the county council and those who supported the non-county borough. As he read that clause it did allow progressive non-county boroughs to start their own maternity homes, and, if they did so, those homes would be under the non-county borough councils and not under the county councils. If it would ease the situation, he would be prepared not to move his amendment to Clause 10, which provided for the approval of the county council of the staff and equipment of a hospital in a non-county borough. Of course, the bigger question must be threshed out at some future time in connexion with the Poor-law, or some question of that sort, when they must come to some general allocation of the powers of different local authorities. As far, however, as this Bill was concerned, he thought that Clause 10 did what was required, and all that was necessary was that the Parliamentary Secretary to the Ministry of Health should assure them that their interpretation of Clause 10 was correct.

Mr. BASIL PETO said that the smaller local authorities had admittedly carried out the duties entrusted to them in 1918 satisfactorily and efficiently, and if Parliament now put over them an over-riding authority in respect of one particular matter they would tend to kill that ambition for public service by local authorities. He unhesitatingly supported the amendment.

Colonel FREMANTLE said they wanted to get at the mischief where it started, that was the bad midwife—there were not many of them now—or the thoughtless, perhaps kind-hearted, midwife, who took into her spare room a single girl in order to see her through her trouble. Eventually she might get two or three such women into her home, and that was the sort of maternity home where all sorts of things went wrong, and there was shocking loss of life. He would give two instances which were brought to him from the south and north of England. Here was one from the south, a case illustrating the importance of registration and inspection of maternity homes:—

> "A practising midwife lives in a small house, three bedrooms upstairs, two sitting-rooms and kitchen downstairs. She took in three maternity cases and in addition to these there were three adults and two children in the house. One child had a septic condition of the face. Here there existed overcrowding and a septic focus—result two cases of puerperal infection. The registration and inspection of maternity homes must apply to cases of this kind."

Who was the person who knew that home? It was the inspector of midwives, who was keeping under review every midwife on the roll. Let him give the other instance from the north of England. A midwife in that area was taking women into her house to be confined, and on one occasion she had as many as three persons at the same time. Following on the line of this midwife another one had now commenced the same practice and had already had several confinements in her house. From having had experience for 12 years of administering the Midwives Act, he knew the women who were working as midwives. It was the midwives who were starting this practice, and they were the women they wanted to get at. He was certain that everyone who had had experience of administration would say that the authority to administer the Midwives Act must be the authority who could get at these bad maternity homes when they were first started. That was the real danger. He quite saw the point which had been raised on behalf of the boroughs. He thought that Major HILLS had put in a very statesman-like way the difficulty of reconciling the rival authorities. He hoped they might have a compromise on this matter, because the Bill was a compromise. Before long they must get a rearrangement of the respective powers exercised by the county authority and the non-county authority in other measures which would come before the House. He appealed to the Committee on behalf of all those people who knew the wicked maternal mortality which was going on, and which it was the object of the Bill to prevent.

Mr. RHYS DAVIES said that he was rather inclined to the view that if they were to get information about these malpractices such information would travel to the officers of the local authorities before it would travel to the county council offices. Consequently he was almost inclined to vote for the amendment.

Sir KINGSLEY WOOD said it was not so much a question that maternity and child welfare work was analogous to the registration and inspection of these homes. He would be the last to interfere with the excellent work which was now going on in that direction, but the real analogy was the registration and supervision of midwives. Every midwife in the country had not only to be registered by the county council or county borough council, but had continually to be under supervision, and it seemed to him a great waste of time and money that when they had the power already in the hands of the larger authorities they should now turn round and say that the minor authorities should be responsible, although they had not the facilities for doing maternity and child welfare work as efficiently as the larger authorities, inasmuch as they had not the officers who could go round and inspect the homes. There were 312 maternity and child welfare authorities who were neither county nor county borough councils. Of that number only 20 had provided their own maternity homes. As regarded voluntary maternity homes used by maternity and child welfare authorities, he found that only 52 of the 312 authorities made use of maternity homes situated in their districts. These facts by no means minimised the importance of the work of maternity and child welfare, but they had a most material bearing when they came to decide which authority should carry on the work. The clauses of the Bill represented a very fair compromise. In Clause 10 it was provided that the expression "maternity home" should not include "any hospital or other premises maintained or controlled by a Government department or local authority . . ." By that means they amply safeguarded not only the homes at present established by these other authorities, but any future homes that might be established. He hoped the Committee would support the Bill as it stood.

The amendment was rejected by 25 votes to 8, and Clause 5, as amended, was then agreed to.

### *Cancellation of Registration.*

Clause 6 (cancellation of registration) was agreed to.

On Clause 7 (which deals with notices of refusal or cancellation of registration) several amendments were taken.

Colonel FREMANTLE moved an amendment providing that not less than 14 days' notice should be given to the applicant or the person registered by the supervising authority of their intention to make an order under the clause.

The amendment was agreed to.

A further amendment was agreed to giving the applicant or person 14 days from the receipt of the notice to show cause why the order should not be made.

Colonel FREMANTLE moved an amendment providing that any person aggrieved by an order made under the clause might appeal against it to Quarter Sessions as well as a court of summary jurisdiction.

The amendment was agreed to.

### *Keeping of Records.*

Clause 8 deals with the power of the supervising authority to make by-laws.

Colonel FREMANTLE moved an amendment providing that by-laws could be made with respect to records to be kept of patients received into and children born in a maternity home, and of children so born who were removed from the home otherwise than to the custody or care of any parent, guardian, or relative. He said the object of the amendment was to get at the root of certain cases of baby-farming.

The amendment was agreed to.

### *Notification of Deaths.*

Colonel FREMANTLE moved an amendment providing that by-laws might be made as to the notification of any death in a maternity home and the cause thereof.

Major-General Sir R. LUCE asked if this was not a very difficult question, and ought they not to have some explanation in regard to the certificate of the cause of death? After all, there was only one legal certificate of the cause of death, and a different cause of death might be given here. It did not say who was to be responsible for certifying the cause of death.

Sir KINGSLEY WOOD said that his department had given consideration to this amendment, and they thought that on the whole it was a desirable thing to include. At the present moment only the actual death itself had to be recorded, but he did not think that there would be any difficulty, and it would be a help to those people who desired to see progress in public health to know exactly what the cause of death was. The great majority of these homes were under medical supervision, and he did not think it would cause any difficulty that the cause of death should appear in these records.

After further discussion,

Sir KINGSLEY WOOD suggested that the amendment should not be pressed that day and they would consider later whether it was necessary.

Sir R. LUCE said his point was that they should be quite sure that the exact cause of death was given.

Sir KINGSLEY WOOD: That can be provided for in the by-laws.

The amendment was agreed to.

A further amendment was passed, striking out a provision that by-laws might be made "generally with respect to the conduct of maternity homes and for carrying into effect this part of the Act."

The clause, as amended, was added to the Bill.

Clause 9 (offences by companies) was agreed to.

### *Interpretation.*

Clause 10 (interpretation) reads as follows:—

In this Act unless the context otherwise requires: The expressions "register" and "registration" mean register and registration under Part II. of this Act; the expression "appointed day" means the first day of January, 1927; the expression "maternity home" means any premises used or intended to be used for the reception of pregnant women or of women immediately after childbirth, but shall not include (*a*) any hospital or other premises maintained or controlled by a Government department or local authority, or by any other body of persons constituted by Parliament or incorporated by Royal Charter; or (*b*) any hospital or other premises for the conduct of which a duly qualified medical practitioner resident therein is responsible; or (*c*) any premises used for the training of persons as midwives, which are approved for that purpose by the Central Midwives Board; the expression "offence against this Part of this Act" includes an offence against any by-laws made under Part II. of this Act.

Sir KINGSLEY WOOD moved to leave out paragraph (*c*) and to insert instead the following:—

"(*c*) any hospital or institution not carried on for profit and not used mainly as a maternity home which may be exempted from the provisions of Part II. of this Act by the local supervising authority."

He said it had been represented to his department that there were, up and down the country, a large number of small cottage hospitals which had no resident doctor, but were staffed with local doctors, who continued to attend their own patients who might happen to be in the hospital. These small hospitals did not strictly come within the definitions which preceded this paragraph, and he thought they should be exempted if the local supervising authority were satisfied that they were conducted on the lines indicated. The amendment was intended to meet the wishes of the medical men in question, who were, no doubt, doing very useful work.

Dr. DAVIES asked if "not carried on for profit" meant that if a medical man sent patients to a cottage hospital he would not be allowed to charge fees.

Sir KINGSLEY WOOD: He will certainly be allowed to charge for his own patients. It only means the home itself.

The amendment was agreed to, and the clause, as amended, was agreed to.

### *New Clauses: The Midwives Roll.*

Sir KINGSLEY WOOD moved the following new clause:—

(1) The Central Midwives Board may, if they think fit, cause the roll of midwives to be divided into two parts, of which one shall contain the names of all those practising midwives whose names have been supplied to the Board by local supervising authorities in the month of January in each year, in accordance with the provisions of Section 8 of the Midwives Act, 1902, and

shall be published annually, and the other shall contain the names of all other persons who are entitled to be on the roll, and shall be published at such intervals, not exceeding five years, as the Minister of Health may approve.

(2) The Central Midwives Board may from time to time by registered letter addressed to any woman whose name is included in the roll of midwives at her address as appearing therein, inquire of her whether she has ceased practice or has changed her residence; and if within a period of six months from the sending of such a letter no answer is received thereto, the Board may erase the name of that person from the roll, and may cancel her certificate, but without prejudice to the power of the Board subsequently to restore the name to the roll and to re-issue the certificate if it appears proper so to do.

The clause was read a second time and added to the Bill.

### *Access to Premises.*

Colonel FREMANTLE moved the following new clause:—

(1) An officer duly authorised by the local supervising authority may, subject to such regulations as may be made by the authority, at all reasonable times enter and inspect any premises which are used, or which that officer has reasonable cause to believe to be used, for the purposes of a maternity home, and to inspect any records required to be kept in accordance with the provisions of this part of this Act.

(2) If any person refuses to allow any such officer to enter or inspect the premises, or obstructs any such officer in the execution of his duty under this section, he shall be guilty of an offence against this part of this Act, and shall be liable, on summary conviction, to a fine not exceeding £5, together with, in the case of a continuing offence, a fine not exceeding £2 in respect of each day on which the offence continues after the date of conviction.

The clause was read a second time and added to the Bill.

### *Wearing of Badges.*

Colonel FREMANTLE moved a new clause providing that the power of the Central Midwives Board to frame rules under the Midwives Act, 1902, should include a power to frame a rule as to the wearing of badges by certified midwives. If a midwife is removed from the roll she must surrender the badge as well as her certificate.

The clause was read a second time and added to the Bill.

The committee stage was concluded and the Bill was ordered to be reported to the House.

### THE ECONOMY BILL.

On Thursday, April 22nd, Sir KINGSLEY WOOD moved the third reading of the Economy (Miscellaneous Provisions) Bill. After discussion, in the course of which important amendments proposed by Dr. DRUMMOND SHIELS, Dr. HADEN GUEST, and others were rejected, the third reading of the Bill was carried by 328 votes to 138—Government majority 190.

### SMOKE ABATEMENT BILL.

In the House of Lords on Thursday, April 22nd, the Public Health (Smoke Abatement) Bill passed through Committee.

### THE BUDGET.

Mr. CHURCHILL (Chancellor of the Exchequer) introduced his second Budget in the House of Commons on Monday, April 26th. He announced that he proposed to transfer £7,000,000 to the Exchequer from the surplus of £19,000,000 which had accumulated in the Road Fund, and to take a proportion of the revenue of the Fund which is estimated this year to amount to £3,500,000. A duty of 5 per cent from Nov. 1st next is to be imposed on legal bets made with bookmakers; a duty of £10 on certificates to be taken out by bookmakers; and a duty of £10 on the registration of each set of premises used by a bookmaker for receiving bets on credit. Relief is to be given for bets laid off, and for bets which for any reason are void. The credit period to brewers for payment of excise duty is to be reduced from three to two months. The three years average for the assessment of income-tax under Schedule D is to be abolished in accordance with the recommendations of the Royal Commission on Income-tax, which sat a number of years ago. The new basis of assessment is to be the income of the preceding year. This provision will come into operation in 1927. A duty on imports of wrapping paper at the rate of 16⅔ per cent. *ad valorem* is to be imposed from May 1st. A preference rebate of one-third of the duty will be allowed on Empire goods. The excise duty on home-grown chicory is repealed. It is proposed that the key industries duty of 33⅓ per cent. *ad valorem* is to continue for a further ten years, except that the rate on optical glass and instruments is to be 50 per cent. *ad valorem*, and the rate on arc lamp carbons 1s. per lb. The duties on hackney motor vehicles are to be made uniform in all districts, chiefly at the higher Metropolitan scale up to those seating 40 persons. There is to be a considerable increase on the heavier vehicles. Commercial goods vehicles of one to two tons and upwards, and tractors and road locomotives of from two to four tons and upwards are to pay higher duties. Vehicles in the last category used for agricultural haulage are not affected. Owing to the difficulties of substituting a motor spirit tax for the present motor licence duties, proposals cannot be made in the present Budget, but Mr. Churchill hopes to make the change in the lifetime of the present Parliament. Customs duties are extended to commercial motor vehicles. A new series of options are to be offered to holders of Savings Certificates of the first issue. It is not proposed to renew the Trade Facilities Act. Dumping is to be stopped by making the new duties on commodities apply from the day of introduction. The principle of a ten years' guarantee is to be extended to all the articles now enjoying Imperial preference.

## HOUSE OF COMMONS

### THURSDAY, APRIL 22ND.

### *Qualifications of Vivisection Inspectors.*

Mr. FENBY asked the Home Secretary if the inspectors under the Cruelty to Animals Act, 1876, were qualified veterinary surgeons and, if not, what special qualifications were required, if any, for the position.—Sir WILLIAM JOYNSON-HICKS replied: The answer to the first part of the question is in the negative. As to the second part, the majority of the Royal Commission on Vivisection in their report expressed the decided opinion that "it is essential that the inspectors should be qualified medical men of such position as to secure the confidence both of their own profession and of the public," and the qualifications which have been required in making these appointments are medical knowledge and standing, and such scientific attainments as would qualify their possessor to appreciate the nature and results of recent scientific research.

### *Sexual Offences against Young Persons.*

Mr. RADFORD asked the Home Secretary whether he was aware that in the recent case of a man who was sentenced to nine months' imprisonment for offences against his daughter aged 11 years, who had now been permanently removed from his control, the court was unable owing to the present state of the law to make a similar order with regard to a younger daughter aged 8 years; and would he consider the desirability of proposing the necessary amendments of the law to meet such cases.—Sir W. JOYNSON-HICKS replied: As I informed my hon. friend last Tuesday, adequate steps have been taken for the protection of the younger daughter. I am aware of the defect in the law to which attention was drawn by the Committee on Sexual Offences against Young Persons (see especially para. 99 of their report). I understand that the Committee on Young Offenders and Neglected Children is likely to propose a number of amendments to the Children Act, 1908, and I will consider the whole matter when their report is received.

### *Care and Education of Defective Children.*

Mr. BRIANT asked the President of the Board of Education the number of schemes for the care and education of defective children which have been submitted to the Board of Education up to March 31st, how many education authorities which were not provided in this respect had failed to submit schemes; and if any steps had been taken to impress them with the necessity of adequate provision for this class of children.—Lord E. PERCY replied: Since the issue of Circular 1340 I have received communications from 225 local authorities, of whom 160 have submitted proposals for making further provision for defective children or have stated that they have the question under consideration. Of the five authorities who made no provision for such children in 1925, three propose to make some provision this year. Authorities' programmes for 1927–30 under Circular 1358 are now being received and examined, but the examination has not yet proceeded far enough to enable me to give information as to their contents.

### *Amalgamation of Common Services.*

Mr. ROBERT HUDSON asked the Prime Minister whether he could inform the House if he was prepared to publish the report of the committee set up, under the chairmanship of Sir Alfred Mond, to consider and report on the amalgamation of services common to the Army, Navy, and Air Force.—Mr. BALDWIN replied: After careful consideration we have decided as a special case to issue the report of Lord Weir's Committee on the amalgamation of services common to the Navy, Army, and Air Force. This report and the reports of the Committee of Imperial Defence published in 1924 (Cmd. 2029), provide the basis of our existing system of coordination, and their conclusions have not been impugned on matters of principle by any subsequent inquiry. We do not think it necessary, or in the public interest, to publish any other report. The minutes of evidence of these inquiries, each of which occupied many months, are very voluminous, and it would not be in the public interest to publish them, but the detailed reports of a number of subcommittees will be published with the main report of Lord Weir's Committee.

### *Town-planning Schemes.*

Mr. TREVELYAN THOMSON asked the Minister of Health how many local authorities had put in hand town-planning schemes under the Housing and Town-planning Act of 1919, and how many local authorities had done nothing in the matter.—Mr. NEVILLE CHAMBERLAIN replied: 273 urban authorities and 51 rural district councils have prepared or are preparing town-planning schemes for the whole or parts of their districts or neighbouring districts. The number of boroughs and urban districts in which, so far as I am aware, no steps have been taken for the preparation of schemes is 825 and the number of rural districts 543. It must not be assumed, however, that all these districts include land for which town-planning schemes should be prepared.

## MONDAY, APRIL 26TH.

### *Chief Medical Officer for the Colonial Office.*

Captain CROOKSHANK asked the Secretary of State for the Colonies what were the functions of the recently appointed chief medical officer in his department; and whether this was a new permanent appointment or merely a re-allocation. of duties.—Mr. AMERY replied: The post to which my hon. and gallant friend no doubt refers is that of chief medical adviser, whose functions, as the title indicates, will be to advise me generally on all medical and sanitary matters arising in connexion with the Colonies and Protectorates, including measures to ensure continuity of policy and coördination of progressive action between different administrations. The post is a new appointment, the creation of which has been authorised in the first instance for a period of three years.

In reply to supplementary questions, Mr. AMERY said this was a whole-time appointment, and the salary was £1500 a year. The officer would be in close touch with the Medical Advisory Committee. The appointment was one which the Secretary of State made on his discretion after carefully considering the merits of the different candidates.

### *Salaries of Regional Medical Officers.*

Colonel WOODCOCK asked the Minister of Health how many regional medical officers were now employed and how many were similarly employed in 1918; what salaries they received and what were their duties; and whether they were entitled to pensions and at what rate.—Sir KINGSLEY WOOD replied: There were no regional medical officers employed in 1918. The present number of salaries of officers on this staff are: 4 divisional medical officers at £1600; 17 regional medical officers at £1400; and 16 regional medical officers at £1000, rising by £50 to £1400; 13 deputy regional medical officers at £800, rising by £30 to £1100. These salaries are all inclusive of bonus, and the posts are pensionable except for those officers who entered the service at 50 or over (21 in number). The duties are concerned chiefly with the Insurance Medical Service, and National Health Insurance Funds bear the appropriate share of their emoluments. The officers act as medical referees regarding the incapacity of insured persons for work and as consultants in giving second opinions in questions of diagnosis. In addition, they are required to carry out certain inspections under the Dangerous Drugs Act, 1920, and the Blind Persons Act, 1920, and, as needed, to inspect Poor-law institutions.

## TUESDAY, APRIL 27TH.

### *Day and Night Telephone Call Offices in Villages.*

Rear-Admiral BEAMISH asked the Postmaster-General if his department was in process of providing public telephone call offices available for day and night service in the villages; whether any such call offices had been established and, if so, where; and, if not, would he state what the prospects were for providing these modern necessities; and whether there were any difficulties.—Sir W. MITCHELL-THOMSON replied: Rural telephone call offices installed in local post-offices are normally available only during the hours when the post-office is open; but urgent calls can generally be made at other hours upon payment of a disturbance fee, if there is a responsible person on the premises. Such calls are rare, and to provide villages with kiosks available for night service would in most cases involve expense out of all proportion to the use made of the facilities. A kiosk can, however, often be provided if the annual deficit is guaranteed by persons interested. A list of villages where day and night telephone service is provided is not readily available.

### *The Spahlinger Treatment.*

Mr. BRIANT asked the Minister of Health if any steps were being taken to make further investigation, if this was necessary, into the results obtained in the cure of phthisis by the Spahlinger treatment; and, in view of the importance of the question to the health of the community, if Government assistance would be given in order to make it available to the large number of persons suffering from this disease.—Sir KINGSLEY WOOD replied: My right hon. friend has offered to send competent medical inspectors to study M. Spahlinger's work at Geneva, and to facilitate scientific investigation in this country if M. Spahlinger will supply his materials and method of use, but up to the present neither invitation has been accepted. The second part of the question does not, therefore, arise.

Dr. VERNON DAVIES asked if it was not the fact that M. Spahlinger has not got the necessary money.

Sir KINGSLEY WOOD replied that that might be so, but directly the Ministry received the necessary information and materials they would be glad to go into the matter.

Mr. T. JONES inquired if the Ministry of Health did not possess a certain amount of discretionary power to give financial assistance in such a case. Was the hon. gentleman not aware of the fact that a large number of trade-unions had already contributed substantially in order to try to make this work a success?

Sir KINGSLEY WOOD: No. I think the right course has been taken in this case—namely, to offer to send our officers to Geneva to study these cases or to ask, on the other hand, that this gentleman should send the material here when we shall be glad to investigate it.

Mr. CLYNES asked if these offers of investigations had been made quite recently.

Sir KINGSLEY WOOD replied in the affirmative. They had been made repeatedly during the last three years.

# Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful:—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

*Part I., Physics and Electrotechnics.*—Gilbert B. Bush, Arthur E. I. Connolly, Austin C. Dixon, William C. Douglass, William R. Dupré, Henry H. Elliot, Mollie Fisher, Margery Freeborough, Raymond B. Gorst, Alan R. Laurie, David P. Levack, Hendrik J. Louw, Peter J. McKenna, Charles W. McKenny, Elsie J. Mann, Robert R. Morrison, Frederick G. Nicholas, Rees Phillips, John O. Priestley, James Raffan, Francis L. Rayner, Ffrangcon Roberts, Solomon J. Rom, Frederic G. Rose, Albert C. Rusack, Satis Chandra Sen, James O. P. Smith, Henry T. Stack, John G. Stephens, Mary L. Stewart, Charles F. O. White, and Harry M. Worth.

*Part II., Radiology and Electrology.*—Gilbert B. Bush, William C. Douglass, William R. Dupré, Raymond B. Gorst, Pam Harumal Jhangiani, Alan R. Laurie, David P. Levack, Charles W. McKenny, Elsie J. Mann, Robert R. Morrison, Frederick G. Nicholas, John O. Priestley, James Raffan, Ffrangcon Roberts, Satis Chandra Sen, and Harry M. Worth.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the undermentioned subjects:—

*Surgery.*—N. H. C. Allen, Guy's Hosp.; G. H. Bickmore, Charing Cross Hosp.; S. B. Browning, Guy's Hosp.; S. E. Hymans De Tiel (Sect. I.), Royal Free Hosp.; C. H. St. Johnston, Birmingham; J. B. Lurie, St. Thomas's Hosp.; P. H. L. Moore, St. George's Hosp.; T. C. Pain, Guy's Hosp.; and E. H. Rampling, St. Thomas's Hosp.

*Medicine.*—C. B. Ball, Sheffield; C. F. L. Haszard, McGill; A. C. Hill, Liverpool; J. L. Hopkins, Guy's Hosp.; D. P. Mitra, Charing Cross Hosp.; M. N. Nicolson and M. Pettigrew, Sheffield; W. H. D. Priest, King's Coll. Hosp.; J. B. Scarr, Manchester; J. Shibko, Cardiff; A. D. Shubsachs, Manchester; and J. W. Whitney, London Hosp.

*Forensic Medicine.*—G. H. Bickmore, Charing Cross Hosp.; C. F. L. Haszard, McGill; W. O. R. Fischer, St. Thomas's Hosp.; J. L. Hopkins, Guy's Hosp.; D. P. Mitra, Charing Cross Hosp.; M. N. Nicolson, Sheffield; W. H. D. Priest, King's Coll. Hosp.; and J. B. Scarr and A. D. Shubsachs, Manchester.

*Midwifery.*—L. G. Apps, London Hosp.; K. Girgis, Manchester and Charing Cross Hosp.; J. E. Howard, St. Mary's Hosp.; and L. Schapera, London Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: G. H. Bickmore, A. C. Hill, J. L. Hopkins, C. H. St. Johnston, D. P. Mitra, W. D. H. Priest, E. H. Rampling, J. Shibko, and J. W. Whitney.

UNIVERSITY OF GLASGOW.—At the graduation ceremony held on April 24th the following awards were made:—

The Captain H. S. Ranken, V.C., Memorial Prize in Pathology to William A. Mackey; the Bellahouston Gold Medal for eminent merit in thesis for M.D. to Hugh S. D. Garven; the Straits Settlements Gold Medal for thesis for M.D. on a subject connected with Tropical Medicine or Tropical Hygiene to Walter Telfer; the Macleod Gold Medal in Surgery to Edward Collier; and the Asher Asher Gold Medal in Laryngology and Rhinology to William A. Mackey.

The following degrees have also been conferred:—

*M.D.*—With honours: John Glaister and Donald M'Intyre. Ordinary degree: Percy Bellwood Farrar.

*M.B., Ch.B.*—With honours William Scoble and Ronald Guthrie Lendrum. With commendation Anna M. Robertson, John Chalmers Olive C. H. C. MacRae, Abraham Mellick William A. Lochhead Agnes Moncrieff Stuart I. A. Laidlaw Archibald Hanton James Campbell and Marion W. Gray.

Ordinary degree William Allan, James Anderson May Anderson, William Anderson, Roderick D. G. Balfour David K. Ballingall Frank C. M. Bamford, Arthur F. Beaton, William Beattie Andrew Bernard, George G. Blair William S. Boyle James Brown, Joseph S. Brown, Katharine R. Brown, Winifred Buchanan, Hutchison Burt, Ada M. Cameron Rina B. Campbell, David P. Cuthbertson John Denholm, Mary E. Devine, Alexander S. Dick, Henry A. A. Doherty, James Durie, Thomas C. Findlay, William H. Fletcher, Findlay J. Ford, Robert S. France James A. Fraser, James Fryer, Charles S. Garrott, Norman C. Gellatly Elizabeth H. Gemmell, Robert G. Gemmell, Ernest W. Grahame, Robert C. Grieve, Mary A. Griffin, Walter Haddow, *Robert Hall, Leslie E. Hamilton, Margaret C. P. Hamilton,* William C. Harris, Constance E. M. Herbertson, Alexander D. Hutchison, John Innes, Philip G. E. Jolley, Robert S. Kerr; David Kilpatrick James L. Kydd, James S. Laurie David D. Lawson William H. Lindsay Miriam E. M'Allum Alastair M'Cracken, James N. M'Cully Donald Macdonald George Mackendrick, William M'Lelland, Andrew A. MacManus, Alexander M. M. Murray, William G. M'Naughton, Ian H. M'Neil Thomas G. H. Martin Victor C. Meyer Robert B. Miller, Thomas M. C. Montford, James Morrison William A. Murray, Mary M. E. Mycroft, Agnes S. Nutt, Thomas S. O'Neill, Dugald C. Orr, James S. Orr, David Prentice Malcolm S. Purvis, Florence Read, Catherine Ross, James Sharpe William Shirkey, Alan F. Shirras, Thomas Sim John Stewart, James H. Thomson, Archibald Walker, Janet B. C. Waugh William Whitelaw, Helen M. Wightman, William Wilkie, and Edward A. Wilson.

Royal College of Physicians of London.—Prof Hugh MacLean will deliver the Oliver-Sharpey lectures on Tuesday, May 4th and Thursday, May 6th at 5 P.M. at the College, Pall Mall East The subject will be Carbohydrate Metabolism in Health and Disease and any member of the medical profession will be admitted on presentation of a visiting card

National Hospital for Diseases of the Heart A two weeks special course in cardiology will begin on Monday, July 5th instead of Monday, July 12th, as previously arranged

Society of Medical Officers of Health.—A meeting of the School Medical Group will be held at 1, Upper Montague-street Russell-square London, W C on Saturday, May 1st at 3 P.M., when Dr Edgar H. Wilkins, now an assistant school medical officer at Birmingham and formerly Director of School Hygiene New Zealand Public Health Department will read a paper on School Medical Work in New Zealand The meeting will be open to all members of the society and to others interested in school medical work

International Physiological Congress.—The Twelfth Congress will be held in Stockholm from August 3rd to 6th. Intending members are asked to forward without delay their names and addresses, together with the amount of their subscription (20 Swedish crowns) to the secretary, Dr G Liljestrand Karolinska Institutet, Stockholm, Sweden from whom full information can be obtained. An excursion through the north of Sweden and Norway and other smaller trips will start immediately after the congress if a sufficient number of members give notice of their intention to take part

Fellowship of Medicine and Post Graduate Medical Association.—On Wednesday, May 5th at 2 P.M. Mr L. E. C. Norbury will give a special afternoon demonstration at St. Mark's Hospital for Diseases of the Rectum to which all members of the medical profession are invited On May 3rd the Royal Waterloo Hospital will begin a three weeks course in Diseases of Women and Children. There will also be an intensive course beginning on the same date at the Central London Throat Nose and Ear Hospital. This will last until May 22nd and is divided into clinical and operative parts which may be taken separately if desired The Maudsley Hospital will provide a series of lectures and demonstrations on psychological medicine throughout the month. The Royal Westminster Ophthalmic Hospital will hold a course in ophthalmology from May 3rd to 22nd Another course continuing throughout the month is one in venereal diseases held at the London Lock Hospital; this includes clinical demonstrations and formal lectures. Dr Eric Pritchard will hold an afternoon course at the Infants Hospital from May 9th to 22nd There will be an intensive course in medicine surgery and the specialties at the Royal Northern Hospital from May 31st to June 12th. Other courses will be given in June on diseases of children bacteriology diseases of the chest, gynæcology, urology There will also be a general practitioners course Copies of all syllabuses of the General Course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship at 1, Wimpole-street London, W 1

Royal Institution.—Prof Joseph Barcroft will lecture on the Lungs on Tuesday, May 4th, at 5 15 P.M.

National Association for the Prevention of Tuberculosis.—The Prince of Wales will preside on Friday, July 16th, at a dinner in aid of the Association's funds.

Middlesex Hospital.—In 1925, the annual report records the number of out patients increased by more than 14 000 to nearly 100 000 There was a deficit on the year's working of £2347

Royal National Orthopædic Hospital.—The twenty first annual report lays stress upon the "urgent and vital need" of additional accommodation at the country branch at Stanmore, and £10 000 of the £87,000 required for extensions has still to be obtained.

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund held on April 23rd, with Surgeon Vice-Admiral Sir Joseph Chambers Medical Director-General of the Navy, in the chair, the sum of £105 was distributed among the several applicants.

The League of Mercy.—The Prince of Wales will be present at a ball to be held at Claridge's Hotel London, on Tuesday, May 11th, in aid of the League of Mercy for the support of hospitals. Tickets may be obtained from the secretary at 20, Cockspur-street, London S.W 1

Messrs. Cassell and Co, Ltd, announce for early publication the third edition of "Diseases of the Nose and Throat" by Sir StClair Thomson. The work has been revised and considerably enlarged, and many new illustrations have been inserted.

Dangerous Drugs Acts.—Sir William Willcox will address the South West London Chemists Association at the Balham Constitutional Club, 221, Balham High road S.W, on Wednesday, May 5th, at 9 P.M. on the Dangerous Drugs Acts: their Application by the Physician and the Pharmacist. Medical men are invited.

Pure Milk for Edinburgh Hospitals.—The Edinburgh Public Health Committee and the Treasurer's Committee have jointly decided that the corporation shall maintain a herd of tubercle-free cows to supply Grade A (Tuberculin tested) milk to its various institutions. About 105 gallons will be required daily, but by reason of the difficulty of collecting a sufficient number of cows capable of giving milk that will pass the tuberculin test, some time must elapse before the arrangement can be carried out completely

Herbert Jones Testimonial Fund.—The following is a preliminary list of subscribers to this fund, which is being raised as a testimonial to the public services of Dr Herbert Jones medical officer of health for the Herefordshire combined districts who is retiring on account of ill health

*£5 5s.*—Dr J. B. Jenkins (Rhondda) Sir George Newman, K.C.B.

*£3 3s.*—The Editor of the *Medical Officer*

*£2 2s.*—Messrs. Ainslie and Hepper (Hereford) Dr J. R. Bulman (Hereford), Dr Meredith Young (Chester)

*£1 1s.*—Drs. E. H. Baldock, A. Middleton Brown, M.O.H., W. B. Butler, Prof. J. T. Cash, E. W. DuBuisson, H. E. Durham S. L. Corry Hugh Fenton, Cyril Francis, J. Oswald Lane, J. H. Lilley Peter Lowe M.O.H. F. S. Machin, Ian W. McGregor R. Wood Power, J. A. Prichard, B. W. Stallard, F. H. Thompson Lieut.-Colonel Wanhill (all of Hereford) Dr. Basil Adams (Newport Sanatorium) J. Ridley Bailey (Bilston), T. W. Barlow O.B.E. J. Blackett (Bath); G. F. Buchan (President of Society of Medical Officers of Health); W. H. Cam (Ross) S. Child (Horsham) H. C. Clark (Wellington), J. Stephenson Clarke (Weobley); Alfred Cox, O.B.E. (Medical Secretary, B.M.A.) W. Allen Daley (Hull); G. R. Darling (Eardisley) W. R. Darroll (Leintwardine) W. S. Davies (Bristol), G. W. Dryland (Kington); A. B. Dunne (Doncaster) C. D. Edwards (Kington); H. R. R. Fowler (Ledbury) R. P. Garrow (Chesterfield) A. Ll. B. Green (Ross) T. L. Hall (Dilwyn), Prof I. Walker Hall (Bristol), Richard Harding (Kington), Mr W. L. Hempson (Tunbridge Wells); Drs. F. C. H. Home (Tarrington) W. J. Howarth (London) C. W. Hutt (London) T. A. Jones (Ledbury) H. V. Lamb (Leominster) A. W. McMichael (Vowchurch) J. W. Miller (Llandrindod Wells) E. A. Milner (Kington); W. H. Morgan (Ewyas Harold); Sir Arthur Newsholme, K.C.B. Drs. Thomas Orr (Ealing); Norman H. Pike (Cheltenham) H. B. Pope (Clifton) A. L. Porter (Reigate) K. G. Salmon (Finsbury Park), Charles Sanders (Carshalton) J. Grimmond Smith (Burghill); E. H. Snell (Coventry) John Steed (Staunton-on Wye); Gerard Steel (Leominster) J. Lionel Stretton (Kidderminster), A. S. Underhill (Barnes); E. Walford (Walmer) A. M. Watts (Broadstairs) James Wheatley (Shrewsbury) E. G. H. Williams (Colwall) Mary Williams (Colwall) J. B. Yeoman (Birkenhead); per Dr J. B. Jenkins—Dr W. E. Thomas Messrs Octavius Thomas, Evan Llywelyn J. Tony Davies, Gwilym Reed and James Williams (all of Rhondda).

*£1*—Prof. A. E. Boycott, F.R.S. (London); Dr T. F. Dewar (Edinburgh)

*10s. 6d.*—Drs A. M. Humphry (Pontrilas); W. M. Lucas Johnstone (Newent) W. A. Murphy (Brymenin).

The fund will remain open until the end of May Subscriptions should be sent to Dr John Steed Staunton-on Wye, Hereford.

THE Home Secretary has appointed Lieut.-Col. John Allan Anderson, M.B., to be an inspector for the purpose of the Cruelty to Animals Act, 1876.

Dr. Henry Renney, medical officer of health for the borough and port of Sunderland, died on April 24th, after several months' illness, at the age of 66.

HULL ROYAL INFIRMARY.—At the annual meeting of Hull Royal Infirmary it was stated that of the total number of 37,334 patients treated in 1925, 20,048 were casualty cases. This is 54 daily, and 2563 more than in 1924. A scheme has been approved for enlarging the infirmary at a cost of £80,000.

GRESHAM COLLEGE.—Sir Robert Armstrong-Jones will deliver lectures on Physic on May 4th and the three following days at 6 P.M. at the Gresham College, Basinghall-street, London, E.C. The subjects of the lectures will be Tumours and Cancer, Arthritis and Rheumatism, Venereal Diseases, and Sleepy Sickness, and they will be open to the public.

LADIES' MEDICAL GOLFING ASSOCIATION.—The spring meeting held at Northwood Golf Club on April 27th was well attended. The Canny Ryall Cup was won by Dr. Joan Ross (99—24=75). Miss Edith Leitch won the scratch prize with a score of 84. Handicap prizes were given in three divisions as follows: Senior division, Mrs. Lewis Smith (86—8=78); second division, Mrs. F. de Paula (89—13=76); third division, Mrs. Dobell (106—28=78). Greensomes were played in the afternoon, the winning couple being Mrs. de Paula and Mrs. Hunter.

STRASBOURG: POST-GRADUATE COURSES.—A post-graduate course on Cancer is to be held by the medical faculty of Strasbourg from Oct. 18th to Nov. 6th, under the direction of Dr. Gunsett, director of the Centre anticancéreux, Hôpital Civil, Strasbourg, from whom particulars may be obtained.—A course on Pulmonary Tuberculosis and Diseases of the Respiratory Tract is also to be held by the faculty from Oct. 8th to 23rd. It has been arranged by Prof. G. Canuyt and Dr. E. Vaucher, and applications should be made to the latter at 8, quai Finkwiller, Strasbourg.

DONATIONS AND BEQUESTS.—The late Baron Leith of Fyvie left by will £1000 to Fyvie Cottage Hospital.—The West Kent General Hospital has received £1000 from Mr. George Foster Clark for the endowment of a cot in the children's ward to be called the George Foster Clark Cot. This sum was presented to Mr. Clark by the National Farmers' Union for his services as Hop Controller.—Mr. Charles Julius Meyer, barrister-at-law, Wallasey, Cheshire, left £2000 to the Victoria Central Hospital, Wallasey.—Mr. William George Lofthouse, Garston, Liverpool, gave on the death of his wife £2000 to Sir Alfred Jones Memorial Hospital to endow two beds, and £100 to the Garston and District Nursing Association.

SMOKE ABATEMENT IN MANCHESTER.—Dr. Veitch Clark, the medical officer of health of the city, has presented a report to the Public Health Committee regarding legislation for the abatement of the smoke evil. Any new smoke abatement Bill, he says, ought to ensure that dense smoke of any colour shall per se constitute a nuisance, of which no defence provided in other sections of the Bill shall be permissible; also that, apart from the penalty imposed on the first hearing of the case, there shall be a daily penalty of £10. As reheating, annealing, hardening, and forging of iron have been carried on in Manchester for many years without the production of dense smoke, it is recommended that none of these processes should be included in any modification of the regulations. Another suggestion is that the Government be requested to take into consideration the possibility of dealing with the smoke nuisance on the same lines as has been adopted in dealing with sewage—that is, by the provision of smoke boards with similar powers and duties to those imposed upon river boards.

CLOSING OF CANTON HOSPITAL.—We have received from Dr. James L. Maxwell, the executive secretary, on behalf of the Executive Committee of the China Medical Association, an official statement of the circumstances under which this hospital was forcibly closed at the beginning of March by the Miscellaneous Workmen's Labour Union of Canton. The Union demanded, among other things, an increase in the wages of all the workmen employed by the hospital; that no man should be dismissed without its approval; that when he was he should be paid a month's wages as a solatium; and that only members of the Union should be employed. The authorities of the hospital, which is "a private life-saving charitable institution," the working expenses of which last year exceeded the receipts by $20,000, refused these demands, thereupon the hospital was summarily closed by the Union. Light and water were cut off, and the sick inmates turned into the streets.

# Medical Diary.

## SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, May 3rd.—8.30 P.M., SOCIAL EVENING. 9.30 P.M., Sir Humphry Rolleston will give an illustrated address on Some Worthies of the Cambridge Medical School.

TUESDAY.—8.30 P.M., ORTHOPÆDICS (Cases at 5 P.M). Annual General Meeting. Cases: Mr. Paul Bernard Roth: 1. Congenital Radio-ulnar Synostosis, occurring in Three Children in One Family, two of them with Absent Patellæ. 2. Case of Madelung's Deformity. Other cases will be shown.

WEDNESDAY.—8.30 P.M., SURGERY. Annual General Meeting. Dr. W. E. Gye: The Origin of Tumours.

THURSDAY.—8 P.M., OBSTETRICS AND GYNÆCOLOGY. Annual General Meeting. Short communications: Prof. H. Briggs: Pregnancy and Ascites. Dr. Herbert Spencer: Two Cases of Adeno-fibroma of the Ovary. Mr. F. J. McCann: A New Method of Cæsarean Section. Dr. J. Ford Anderson: On Total Transposition of the Viscera and its Clinical Importance.

FRIDAY.—5 P.M., LARYNGOLOGY (Cases at 4 P.M.). Annual General Meeting. Epidiascopic Demonstration by Dr. W. Jobson Horne. Cases will be shown by Mr. H. Bell Tawse, Dr. Dan McKenzie, Mr. Norman Patterson, Mr. F. J. Cleminson, Mr. Leslie Powell, and others. 7 P.M., ANÆSTHETICS. Annual General Meeting.

SATURDAY.—10.30 A.M., OTOLOGY (Cases at 9.45 A.M.). Annual General Meeting.

SATURDAY AND SUNDAY.—BALNEOLOGY AND CLIMATOLOGY. Annual Provincial Meeting at Llandrindod Wells. Fellows and Members who wish to attend should communicate with Dr. Ackerley, Llandrindod Wells, before May 6th, so that arrangements may be made with the Railway Company and for the hotel.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, May 4th.—5 P.M., Prof. H. MacLean: Carbohydrate Metabolism in Health and Disease (First Oliver-Sharpey Lecture).

THURSDAY.—5 P.M. (last Oliver-Sharpey Lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 3rd, to SATURDAY, May 8th.—Special afternoon demonstration in clinical surgery at the St. Mark's Hospital for Diseases of the Rectum on Wednesday, at 2.30 P.M.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Clinical and operative intensive course, first week.—LONDON LOCK HOSPITAL, Dean-street, W. Clinical work daily and formal lectures throughout the week as per syllabus.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special course in children and women's diseases.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Afternoon course; clinical work daily and three demonstrations per week.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Lectures and demonstrations pertaining to Psychological medicine. Further information from the Secretary of the Fellowship of Medicine.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, May 4th.—5 P.M., Dr. H. W. Barber: Alopecia Areata and Vitiligo.

THURSDAY.—5 P.M., Dr. A. M. H. Gray: The Sarcoids and Lupus Pernio.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

THURSDAY, May 6th.—5 P.M., Prof. J. Barcroft: Recent Work on the Spleen.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, May 4th.—4.15 P.M., Mr. S. R. Wilson: Demonstration of the Use of Ethylene.

FRIDAY.—4.15 P.M., Dr. R. S. Paterson: X Ray Investigation of the Intestinal Tract.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Quay-street.

THURSDAY, May 6th.—4.15 P.M., Mr. McEvedy and Dr. Twining: The Surgical Dyspepsias.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES POST-GRADUATE COURSE.

THURSDAY, May 6th.—4.30 P.M., Dr. Gibson: Dermatological Therapeutics.

SHEFFIELD UNIVERSITY POST-GRADUATE CLINICS.

FRIDAY, May 7th.—3.30 P.M. (at the Royal Hospital), Prof. Hall: Medical Cases.

# Appointments.

HALL, Prof. A. J., M.D. Camb., F.R.C.P. Lond., has been appointed Consulting Physician to the South Yorkshire Mental Hospital.

PEIRCE, E. R., M.R.C.S., L.R.C.P. Lond., an Assistant Port Medical Officer in Liverpool.

SIMPSON, G., M.B., B.S. Melb., M.R.C.P. Lond., Assistant Resident Medical Officer to Queen Charlotte's Maternity Hospital.

# Vacancies.

*For further information refer to the advertisement columns.*

*Beit Memorial Fellowships for Medical Research*—Jun. Fellows. £350

*Birmingham, Selly Oak Hospital.*—Res. Jun. Asst. M.O £300

*Bradford Royal Eye and Ear Hospital.*—Res. H.S. £120

*Brighton, Royal Sussex County Hospital*—H.S. £150

*Bristol University*—Lecturer in Forensic Medicine and Toxicology Also Lecturer in Public Health.

*Cancer Hospital, Fulham-road, S W*—H.S. At rate of £100

*Cardiff, Royal Hamadryad Seamen's Hospital.*—Hon. Consulting P

*Central London Throat, Nose and Ear Hospital, Gray's Inn road, W C*—Hon Asst. Out-patient Reg

*Chester County Mental Hospital.*—Fourth Asst. M.O £300

*Dagenham Sanatorium, Dagenham, Essex*—Asst. M.O £250

*Dublin, St. Vincent's Hospital.*—Asst S. to Out patient Dept.

*Durham County Mental Hospital*—Second Asst. M.O £500

*Fulham Metropolitan Borough*—M.O H £1100

*Greenwich, Dreadnought Hospital.*—Med. Supt. £300

*Hampstead General and North West London Hospital, Haverstock Hill N W*—H.S. and Cas. Surg. O. Each at rate of £100

*Hospital for Epilepsy and Paralysis, Maida Vale, W.*—Med Reg £100

*Hull City Education Committee*—Chief Asst. Sch M.O £750

*Leicester City Isolation Hospital and Sanatorium.*—Res. Med. Supt. £900

*Leicestershire and Rutland Mental Hospital, Narborough, near Leicester*—Second Asst M.O £350

*Liverpool, Eye and Ear Infirmary, Myrtle-street*—Hon. Aural S.

*Liverpool Hospital for Women, Shaw-street, Samaritan Hospital for Women.*—Hon. Asst. S.

*London Fever Hospital, Islington, N*—Asst. Res. M.O £250

*Manchester, Royal Eye Hospital.*—Jun. H.S. £120

*Manchester Royal Infirmary.*—Med. Reg £150

*Metropolitan Asylums Board, Mental Hospitals Service.*—Second Asst. M O £560 Also Jun. Asst. M.O £500

*Pendleton, Municipal Maternity Home and Babies Hospital.*—Asst Child Welfare M.O £619 13s

*Penshurst, Kent, Cassel Hospital for Functional Nervous Disorders.*—Jun. Res. M.O £250

*Queen Charlotte's Maternity Hospital, Marylebone, N W*—M.O for Antenatal Dept

*Royal Northern Hospital, Holloway, N*—Cas O and H.S. At rate of £90 and £70 respectively Also Surg. and Phys.

*St George-in the-East Hospital, Raine-street, E*—First Asst. M.O and Second Asst. M.O At rate of £600 and £150 respectively

*St Mary's Hospital W*—First Asst. Pathologist. £500

*St. Mary's Hospital for Women and Children, Plaistow, E*—Res. M.O At rate of £175

*Salisbury General Infirmary*—H.S. £150

*Sheffield, Royal Hospital.*—Asst. Cas. O £80

*Sheffield Royal Infirmary*—Jun. Aural and Ophthalmic H S. £80

*Shrewsbury, Eye, Ear and Throat Hospital for Shropshire and Wales.*—H.S. £200

*Swansea General and Eye Hospital*—Sen. Res. O £350 Also H.P £150

*Throat Hospital, Golden square, W*—Res. H.S. £100

*University College Hospital, Gower-street W C*—Harker Smith Reg £250, Also Obstetric Reg £135

*Walthamstow, Wanstead, and Leyton Hospital, Orford-road, E*—Jun. H.S. At rate of £100

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Carnarvon (Carnarvonshire)

# Births, Marriages, and Deaths.

## BIRTHS.

McGRIGOR.—On April 16th, at Welbeck street, W, the wife of Major D B McGrigor O B.E., R.A.M.C., of a daughter

MORLEY.—On April 27th at 8, Burlington road, Withington, Manchester, to Mr and Mrs John Morley—a daughter

OLDHAM.—On April 13th at Calton Cottage, Morecambe, Lancashire, the wife of Dr T V Oldham of a son and a daughter

## MARRIAGES.

MELVILLE—RUSSELL.—On April 10th, at the Parish Church, Stoke-in Teignhead, South Devon, William Spence Melville, M B., Ch.B., to Mabelle Annie, only daughter of Arthur B. Russell, of Dunmore-road Wimbledon.

WALKER—WILSON.—On April 24th, at All Saints, Fulham, Kenneth Macfarlane Walker, F R.C.S., to Eileen Marjorie Wilson only daughter of Mr and Mrs. F H Wilson, of Marlborough Mansions, Cannon hill, N W

## DEATHS

HAMILTON.—On April 20th, at his residence, Brentwood, Prestwich Park, Manchester, Thomas Hamilton, L.R.C.P., M.R.C.S.

HOPE.—On April 18th at Southsea, John Hope, M.D., L.R.C.S. Edin., formerly of Chobham, aged 86 years.

JOHNSTON.—On April 23rd, at a nursing home in London, Col Charles Arthur Johnston, C.B., D S.O., I.M S., aged 59.

MAURICE.—On April 22nd at Craven-road, Reading, William James Maurice, M.B Oxf., aged 68

WHITE.—On April 10th at the Barn House, Chinnor, Oxon., Edgar Ramsay White, F R.C.S., late of Deal

*N.B.—A fee of 7s. 6d is charged for the Insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts.

## APPLICABILITY OF DREYER'S ANTHROPOMETRIC FORMULÆ TO BOYS.

### BY D CARADOG JONES.

STATISTICS of height, weight, and chest girth have been collected and their relations studied scientifically from the time of Quetelet onwards. Indeed, he may be regarded as the founder of anthropometry. *Measurements* of vital capacity—the amount of air an individual can expel from his lungs after a deep breath—were added when Hutchinson began his work. Many formulæ have been proposed by various writers to connect weight with height, vital capacity with weight, and so on. Among the most attractive of recent date are those due to Prof Dreyer, of Oxford.

Under the title of "The Assessment of Physical Fitness" Dreyer has published tables which aim "*to supply medical men and others interested in the subject with a method . . . whereby physical fitness can be assessed on the basis of a few simple measurements.*" These tables depend (p 20) upon the following ratio formulæ for determining V (vital capacity) from W (weight) and λ (stem length, or height of trunk alone) in the case of males:—

$$V = W^{0.72}/0.69 = \lambda^{2.257}/0.1172$$

—i.e, formulæ of the type

$$V = W^n/K,\ V = \lambda^n/K,$$

in which n and K are called "constants" by Dreyer. When in the above formulæ approximate values are substituted for n—namely, ⅔ for 0·72 and 2 for 2·257, he found that they became

$$V = W^{\frac{2}{3}}/0{\cdot}360 = \lambda^2/1{\cdot}90.^*$$

In his table-book Dreyer states: "While it cannot be claimed that the constants employed . . are to be regarded as fixed and final, it can be stated that any changes they may have to undergo in the future, as a result of the further accumulation of data, in normal adolescents . . . will be small and not likely to impair their present validity from the practical point of view" It will be noted that the author, in the passage quoted, appears to limit the application of his ratios to normal adolescents, but on the next page he remarks that 'for the range of indices given, it has been found that the question of age is of little or no importance up to an age of about 50 years.' Moreover, out of ten examples to illustrate the use of the ratios, at the end of the same book, he takes one male aged 8 years, one aged 9, two aged 13, and one female aged 9; also, in a study of *pulmonary tuberculosis*† he applies the ratios in several instances to quite young boys and girls. It is therefore important to consider the foundation on which the constancy of the K's rests and with that in view I have tested it on the average measurements of a number of boys between the ages of 11 and 19 in a large grammar school.

The original data which led to the adoption of these ratios by Dreyer were the result of observations made on "16 men and boys who were carefully selected on account of their physical fitness and covered as widely different a range in weight, height, &c., as possible"; their ages varied from about 13 to 52 years.‡ In the same paper the author adds that "before accepting these constants" (i e., the values he had found for the n's and K's in the case of the 16 men and boys, and in a few other groups to be noticed presently) "as valid standards, it became important to see how they would compare with the constants that could be obtained from Schuster's extensive series of measurements of vital capacity in 959 Oxford undergraduates." He then proceeds to calculate from Schuster's data the K's in the ratios

$$K = W^{0.72}/V;\ K_1 = W^{\frac{2}{3}}/V;\ K_2 = \lambda^2/V.$$

Table I, the details of which are taken from THE LANCET article quoted above, exhibits the result of such calculations for Dreyer's *own groups* as well as for the Oxford data.

The striking fact about this table is the practically exact agreement between the values for the K's in the first and last groups, since Schuster's observations were quite independent of Dreyer's On examining Schuster's data, however, it is found that certain allowances had to be made before calculating the ratios:—

(*a*) The weight in Dreyer's ratios is not weight without clothing, whereas Schuster weighed his men *fully dressed* but without boots and without coats. For this Dreyer appears to have allowed weights varying from 2650 to 2700 g. in Schuster's six age-groups; the average allowance, weighted according to numbers in the different age-groups, is 2720 g. or 6 lb. almost exactly.

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* THE LANCET, 1919, ii, 229

† Ibid., 1920, i, 1212.

‡ Ibid., 1919, ii, 227.

(*b*) Dreyer measured the stem length in a perfectly definite manner. Schuster seems to have measured the sitting height, though only the figures for full stature and length of leg are given in the account of his observations in *Biometrika* (vol. viii.). By subtracting the one from the other we get the body length which exceeds the number taken by Dreyer for stem length at each age by 2·7 cm. This deduction is presumably necessary to make the two methods of measurement comparable.

(*c*) Dreyer took five measurements of V for each person and chose the highest of the five readings, whereas Schuster took three readings and chose their mean. Dreyer himself states that in a large number of observations he found the highest reading was about 5 per cent. greater than the mean of five readings.

I have re-calculated the K's for Schuster's data: (*a*) making an exact allowance of 6 lb. for weight of clothes in each age-group, (*b*) accepting Dreyer's reduction of Schuster's figures to get the stem length, and (*c*) adding 5 per cent. to Schuster's figures for vital capacity. Table II. shows my results for each age-group, and I have included for comparison the values of the same constants for eight groups of boys, 1110 in all, varying in age from 11 to 19 years. The last row of Table II. differs appreciably from the last row of Table I.

Table I.—*The K Constants in Dreyer's and Schuster's Observations.*

| No.* | Description of group. | $K = W^{0 \cdot 72}/V$ | $K_1 = W^{\frac{2}{3}}/V$ | $K_2 = \lambda^2/V$ |
|---|---|---|---|---|
| 16 | Men and boys selected for physical fitness. | 0·690 | 0·380 | 1·90 |
| 14 | Oxford undergraduates. | — | 0·380 | — |
| 7 | Boy scouts. | — | 0·390 | — |
| 12 | Men (mixed upper classes). | — | 0·416 | — |
| 12 | Men (mixed lower classes). | — | 0·445 | — |
| 12 | Females (mixed classes). | — | 0·493 | — |
| 959 | Schuster's Oxford undergraduates. | 0·690 | 0·381 | 1·90 |

* Number in group.

Table II.—*Variation of the K "Constants" in Dreyer's Formulæ with Age.*

1. *Grammar School-boys.*

| Age in years. | No. in group. | $K = W^{0 \cdot 72}/V$. | $K_1 = W^{\frac{2}{3}}/V$. | $K_2 = \lambda^2/V$. |
|---|---|---|---|---|
| 11– | 29 | 0·834 | 0·479 | 2·45 |
| 12– | 112 | 0·781 | 0·447 | 2·29 |
| 13– | 173 | 0·800 | 0·445 | 2·27 |
| 14– | 255 | 0·783 | 0·442 | 2·23 |
| 15– | 263 | 0·743 | 0·417 | 2·14 |
| 16– | 173 | 0·736 | 0·411 | 2·10 |
| 17– | 80 | 0·718 | 0·400 | 2·16 |
| 18– | 25 | 0·658 | 0·360 | 1·88 |
| 11–19 | 1110 | 0·763 | 0·430 | 2·18 |

2. *Oxford Undergraduates.*

| Age in years. | No. in group. | $K = W^{0 \cdot 72}/V$. | $K_1 = W^{\frac{2}{3}}/V$. | $K_2 = \lambda^2/V$. |
|---|---|---|---|---|
| 18– | 129 | 0·659 | 0·365 | 1·78 |
| 19– | 330 | 0·659 | 0·365 | 1·82 |
| 20– | 209 | 0·650 | 0·365 | 1·82 |
| 21– | 137 | 0·647 | 0·358 | 1·78 |
| 22– | 95 | 0·657 | 0·364 | 1·81 |
| 23– | 59 | 0·637 | 0·352 | 1·76 |
| 18–24 and over | 959 | 0·650 | 0·363 | 1·81 |

It is clear from Dreyer's own observations that the K's vary with the class to which the ratios are applied (see, for example, Table I.). This he himself admits, and he uses the variation to differentiate between one class and another as to physical fitness. My concern here is to point out that, *even in dealing with the same class, the K's are not constants: they are functions of age as well as of class.* To prove this, the 1110 boys have been arranged in age-groups and the mean values of W, V, and λ found for each group; the resulting K's are seen to decrease as the age increases, and it is particularly noteworthy that the values where one set of observations (grammar school-boys) ends agree closely with the values where the other set of entirely independent observations (Schuster's undergraduates) begins.

The conclusion to which we are led is that, in the ratio formulæ discussed, expressing V in terms of W and in terms of λ respectively, the so-called "constant" K is really a function of the age of the subject; prior to full maturity, at all events, K tends to decrease as age advances.

Another formula used by Prof. Dreyer, relating weight to stature, seems to be subject to less variation with age in dealing with the averages of large numbers (see *Nature*, April 10th, 1926; also a complete account of Dr. Mumford's work at the Manchester Grammar School concerning health and growth, to be shortly published).

I am indebted to Miss P. M. Borthwick, on the staff of Manchester University, for kindly verifying all my calculations; and to Dr. Alfred Mumford, medical officer of Manchester Grammar School, for the data relating to boys.

## THE MEDICAL SITUATION IN CHINA.*

By H. Jocelyn Smyly, M.D. Dub., F.R.C.S. I.,

PEKING UNION MEDICAL COLLEGE.

A report published by a Commission sent to China by the Rockefeller Foundation in 1914 to make a survey of medical conditions, stated that outside the Treaty ports there was practically no modern medical service except that of the mission hospitals. This remains substantially true to-day, the reason being that although Chinese are returning in increasing numbers to their own country, equipped with a training in modern medicine gained abroad, they find ample scope for their service amongst their compatriots in such places as Shanghai and Tientsin; whereas, the inhabitants of the inland cities are not yet sufficiently convinced of the value of these methods to pay the large cost of modern hospitals, nor to commit themselves to the care of a scientific physician without simultaneously calling in as many of the old style practitioners as they can afford to pay. In these circumstances the mission hospital, in addition to the primary religious purpose which it is founded to promote, is a pioneer also in scientific practice, and it unquestionably provides the young Chinese doctor outside of the modern cities with the best, if not the only, opportunity for giving in an adequate way the service for which he has been trained.

It is true that in the past, and to a great extent to-day, these hospitals have been lamentably ill-equipped owing to lack of funds, but a general steady improvement in their efficiency is being made, and a certain number are excellent examples of what a modern hospital should be; they are housed in good buildings, provided with a regular nursing service, a laboratory, operating and X ray plant, and have good sanitation, kitchen and laundry. The Americans take a lead in such development, but some British hospitals hold a good position in this category, such as the new S.P.G. Hospital in the city of Tatungfu in the inland province of Shansi. Their effectiveness and the measure of local support which they receive is largely proportional to the efficiency of their organisation and the amount of foreign money invested in them. This example is being followed by enlightened Chinese, who have erected a thoroughly up-to-date model hospital in Peking, and others in Canton and Shanghai.

For the provision of modern medical service to the country as a whole, medical schools are essential. A certain number of Chinese schools are in existence, but although they are improving they are, on the whole, of a low standard. The missionary forces at work in the country have also about half a dozen medical schools. The best of these is at Tsinanfu, Shantung. This school, while not first class, gives a good training and is steadily improving year by year. It is operated by a group of nine missionary societies—four British, one Canadian, and four American—and is incorporated under a Canadian charter. The faculty numbers 28, and, including nursing and house staff, there is a total full-time qualified staff of 51. The annual cost, including salaries, is £21,000.

In Peking the Rockefeller Foundation has a medical school, the Peking Union Medical College. This institution, originally founded in 1906 by missionaries, maintains its connexion with the six missionary societies who originally conducted it; it is owned and supported, however, by the Rockefeller Foundation. The college is palatially housed and liberally equipped with every provision for scientific teaching and research. There is a full-time medical teaching staff of about 60, in addition to the resident medical staff of the hospital, a nursing school, and the administrative departments. The annual cost is about £160,000, including salaries. Each of these schools has about 100 students, and both are co-educational.

Public health work is coming to be recognised as one of the most important lines of development in medical work in China. In this again missionaries have been for several years the pioneers. A union of six organisations—the Y.M.C.A., Y.W.C.A., China Medical Association (Missionary), National Medical Association (Chinese), China Christian Educational Association, and the Nurses' Association of China—has organised a council on public health education in Shanghai under the direction of Dr. W. W. Peter. This body works mainly, as its name implies, in popular education in hygiene, taking the schools as its most effective sphere for propaganda. It also carries out and stimulates the routine examination of students, and other work. Occasionally it makes its appeal to the masses, as, for instance, in Foochow following an epidemic of cholera in 1919, when the number of cases was estimated at 10,000 with a severe death-rate. A local committee, with the advice and assistance of the Council on Health Education, organised a week of publicity in June, 1920; 217 meetings were held, at which 110,000 by count were present. In addition a parade traversed 90 per cent. of the main thoroughfares for six days presenting in striking exhibits, mounted on floats, the right and wrong ways of dealing with water, food, and human excreta. As a result only a few sporadic cases of cholera occurred that summer, which investigation showed to have been brought in from outside. There was cholera north and south of Foochow and in Formosa across the Straits.

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* Being an abstract of an address delivered at a meeting of the Society for the Propagation of the Gospel held on April 21st.

An appeal has been issued by the National Medical Association (a purely Chinese association of modern physicians), meeting in conference in Shanghai last February, which is worth quoting. Among the resolutions passed were the following:—

> That the National Medical Association of China hereby expresses its great appreciation to the British Government and people for the return of their share of the Boxer Indemnity, and at the same time expresses the hope that a substantial portion of the fund may be allocated for the specific purpose of promoting public health activities in China.
>
> That since Great Britain has been a pioneer in the field of public health, whose present leadership is attested by the low mortality and morbidity rates, by the development of the most modern public health practices and governmental machinery culminating in the establishment of a Ministry of Health, the Chinese people may confidently look to Great Britain for guidance and help in promoting public health in China.

These resolutions were passed following an address by Dr. F. C. Yen, brother of the Minister-elect to Great Britain. It is to be hoped that they will receive favourable consideration from the Commission appointed from this country to decide on the appropriation of the return portion of the indemnity.

## POLAND, TO-DAY AND TO-MORROW.

FEW nations have received more sympathy than Poland, but seldom has sympathy been so ineffective. To the Englishman the country is inexpressibly remote and its political position since the war has unfortunately done little to foster understanding or encourage everyday coöperation. On another page we record the opening of a school of hygiene at Warsaw and quote the sentiments which animate the public health authorities in Poland. The development of a health policy is only one of the ways in which a nation once great is striving to regain the civilisation of which it has been baulked, and it is in every way desirable that something of the progress made and forthcoming should be understood in this country. We welcome, therefore, the appearance of "The Polish Handbook" (published in English from 17A, Portland-place, London, W. 1, at 10s. 6d. net), which contains a good map and some 700 pages of well-arranged and readable information. This "guide to the country and resources of the Republic of Poland," printed by Eyre and Spottiswoode, Ltd., is just what is wanted to interest business men, travellers, or ordinary people in the Poland of to-day. Its editor apologises for gaps in the information provided, but this is inevitable in describing a State which has been in independent existence for only six years; and with him we hope that a second edition will soon give an opportunity of remedying defects. Much information of interest to medical men will be found in the sections on public health, housing, and labour and social welfare.

## R.A.M.C. TRAINING MANUAL.

THE teaching of the Royal Army Medical Corps was so sound that much of it survived the test of the Great War. The latest edition[1] of the Training Manual contains new matter on gas poisoning, carriage of stretchers on the shoulder, convalescent camps, and aseptic surgery. In the previous issue two reasons for the existence of the Corps were given: (1) the prevention of disease and (2) the care and treatment of the sick and wounded; to these are now added (3) the collection and evacuation of sick and wounded, and (4) the preparation of professional records about them. These four purposes are kept steadily in view all through the Manual, and it is further impressed on all ranks that they must not only take the greatest care of their wounded comrades, but forthwith record their names, lest they lose pensions; not only do their best to preserve the persons of their patients, but also their personal effects, of which a careful list must be made at once to save trouble later. The account of the new organisation of the Corps in war is clearly detailed, and the reader in search of examples will find them in the Medical History of the War. The paragraph on food values disappoints. Is it much use to an orderly to know that carbohydrate and protein yield 4, fats 9 calories per gramme, when he is not told the composition of the foods which are given in ounces? The U.S. Navy Hospital Corps Handbook does better than this. The old picture of intestinal villi has gone, and instead there is a good picture of the teeth, and a page of valuable advice on dental hygiene. The book is a clear statement of guiding principles and well worth its modest price.

## AFRICAN MEDICAL REMEDIES AND CHARMS.

THE department of pharmacology of the University of Witwatersrand some time ago began a detailed investigation into the medicinal value of plants and other materials. The head of the department, Prof. J. M. Watt, sent out several thousand questionnaires to all parts of the sub-continent, inviting any who were interested to submit specimens. His most sanguine expectations have been exceeded; from Northern Rhodesia alone no fewer than 1000 specimens have been received, and they have come in from all over the Union and from distant parts. The object of the investigation is to ascertain the value of charms, poisons, and homely remedies, with the idea of finding some whose virtues are at present unknown to the medical profession. It will take time to deal with the material now available and no results of this interesting study are likely to be published in the near future.

## THE HANDWRITING OF MEDICAL MEN AND STUDENTS.

*To the Editor of* THE LANCET.

SIR,—Might not the examining boards, or the General Medical Council, be warned by *Punch* this week and do something to try and improve the handwriting of medical men and students? This thought will probably have occurred to others besides myself. Very few of us always write a good and legible hand, and many of us often write badly; but others *invariably* write so very badly that they thereby cause their fellow-men much trouble and loss of time. Consultants often waste much valuable time in trying to read the letters, and especially the names, of medical men who have written to them for appointments. They are often obliged in the end to cut out the signature of the medical practitioner from his letter and to gum it on their reply envelope. Also, general practitioners are often annoyed by badly-written prescriptions from consultants, which they cannot possibly make out; and it is left for the dispensing chemist to do the best he can. This bad writing often leads to mistakes; some irritating, others amusing, others serious.

Examiners in reading over the final examination papers not infrequently meet with papers which are so very badly written that in many parts they are illegible. Yet these candidates have passed the entrance examination in general education and the ability to write a legible hand ought to be one of the requirements of such examinations. Students should remember that if they do not take the trouble to write a legible hand, examiners may not take the trouble to read all parts of their papers, and hence many marks may be lost. Examiners have usually to read through a large number of papers in a very limited time, and if a candidate's writing is so bad that it can only be made out by the use of a lens, or by prolonged consideration, it is evident that however patient the examiner may be, he is obliged, by time-limits, to pass over the very badly-written parts of the answers. (Another common defect is the frequent use by candidates of abbreviations, such as A.H., A.M.P., &c., which are often puzzling at first sight.)

It is difficult to know how to deal with these extremely bad writers. But so many of them could become good writers after lessons with a writing master for a short time; and this would be of great service to them for the rest of life. One British examining board has a regulation that marks will be deducted for bad writing; but candidates who have written badly will not know of the reduction in their marks, and will make no efforts to improve. If examining boards were to make a regulation that their examiners when sending up the results of the final examinations should report those candidates whose writing was extremely bad, then these men might be asked to take lessons from a writing master, and to give evidence that they can write a more legible hand before the degree or diploma is granted. Or the examining boards might report to the General Medical Council the names of successful candidates whose writing was extremely bad; and the Medical Council might then do good service to the community by requiring these men to take lessons from a writing master, and to give evidence that they can write a more legible hand before their degrees or diplomas are registered.

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[1] Royal Army Medical Corps Training, 1925. H.M. Stationery Office. 1925. Pp. 383. 1s.

Such regulations would do much to strongly impress on these bad writers the necessity for writing a more legible hand; and many bad writers might be converted into good writers. Many mistakes and much trouble would be thereby avoided, and the regulations would be of great service, both to the men themselves and also to the community.

I am, Sir, yours faithfully,
April 16th, 1926. R. T. W.

⁂ A medical officer of the Scottish Board of Health has just called the attention of insurance practitioners in Dundee to the illegibility of certification forms which they have filled in for panel patients. Each form, says this officer in his report, is a cheque presented for payment by the drug fund, and he adds: "With such scrawls as these, in many cases it is quite impossible for the clerk to the committee to say who the drawer is meant to be, and whether he is an insured person."—ED. L.

## ADRENALIN FOR PARAPHIMOSIS.

*To the Editor of* THE LANCET.

SIR,—The use of adrenalin in cases of paraphimosis is not perhaps as widely known as it should be. Hence the necessity for the note of "M.B." in your issue of March 6th (p. 530). I have been using this drug in cases of paraphimosis for the last two years and it has never failed in any case so far. I first came to know the use of this drug in "Clinical Memoranda" by Brand and Keith. The authors of this book advise to wrap the end of the penis, including the strangulated band, with a compress of absorbent cotton-wool soaked in a mixture of equal parts of adrenalin chloride (0·1 per cent.) and cocaine hydrochloride (10 per cent.). The compress is kept in place for about 15 minutes by a bandage with a moderate amount of compression. On removal of the compress the œdema will be found to have completely disappeared and with a little traction the prepuce can be restored to its normal position.

I am, Sir, yours faithfully,
YOGINDRA DEVA, B.Sc., M.B., B.S.
Fyzabad, India, March 31st, 1926.

## RAT DESTRUCTION.

IT is not a very big step from the appointment of a professional rat-catcher to the appointment of an economic biologist to supervise, as a sanitary inspector, the destruction of rats and mice; and considering the damage done by rats it is a wonder that the step was not taken long before the Rats and Mice (Destruction) Act, 1919, came into force. In a recent small book (A Practical Handbook of Rat Destruction. London: John Hart, 1926), Mr. C. L. Claremont quotes authorities who state that in this country rats probably cost about £70,000,000 per annum, while in India the total losses due to the spread of plague and other incidental activities of rats amounted to £828,000,000 in a period of 20 years. The common brown rat and the black or ship rat are the two varieties commonly met with in this country, and apart from certain important prophylactic measures concerned with building, the practical methods of rat destruction are comprised under the headings of hunting, trapping, gassing, poisoning, and artificial infection with disease—the virus method. Mr. Claremont discusses all these methods in detail, adding a useful appendix with formulæ of baits. He also sets out measures for coöperation in rat destruction by the various authorities concerned. The book should be of great interest to all public health workers and of service to those concerned in rat destruction.

## MANCHESTER HOSPITALS AND INSTITUTIONS.

St. Mary's Hospitals treated over 17,000 patients in 1925. The income was £32,256, the patients contributed £6787, and there was a deficit of over £11,000. At least £6000 will be needed for the new nurses' home in Victoria Park, and £3000 per annum is required to keep up the 20 extra beds and 18 babies' cots for which room can now be found at the Whitworth-street Hospital.—The Manchester Radium Institute treated 6479 patients in 1925 as against 4903 in 1922. Attention has been called to the meagre response of the public, not only of Manchester but of Lancaster, to the annual subscription list. The Institute, it is remarked, cannot keep going on £250 a year. A donation of £4000 has been received from the trustees of the late Colonel Barlow, of Bury. Radium now costs £12 per mg., but it cost £28 per mg. at the time when the Institute paid for most of its £35,000 worth of stock.—At a meeting of the Incorporated Accountants on April 14th Mr. B. B. Ormerod, managing director of the Family Medical Services, Ltd., spoke of the need of a middle-class hospital for Manchester which could be run on similar lines to St. Chad's Hospital at Birmingham.

## WHO'S WHO.[1]

THIS is a belated review, but if it is assumed that, before a work should be criticised, it should be read from cover to cover, there is nothing dilatory about a notice in April of the 1926 edition of "Who's Who," published in January, for the work now contains over 3000 pages. It is probably more often used in newspaper offices than any other book of reference, and it is in those offices that its inclusive nature is particularly appreciated. Many cynical comments have been made upon the relative space which autobiographical contributors allot to themselves, and it is a fact that comparatively unknown followers of divinity, medicine, and law, and many civil servants and officers in the Services obtain in "Who's Who" fuller notice than is claimed by, say, Mr. Stanley Baldwin or Signor Mussolini. But it is the less widely known people concerning whom the journalist wants to have information, so as to form an estimate of their right place when their names occur in connexion with any public proceedings or developments. It is quite important in commenting upon current events to know whether the protagonists of any movement, the critics of any policy, the belauders or denouncers of any departure possess adequate qualifications for expressing an opinion. Speaking for medical journalism, if to the general newspapers a communication is made announcing dogmatically the discovery of a way to prevent, to avoid, or to cure cancer—not an unusual occurrence—it is convenient to ascertain from the columns of "Who's Who" what recognised position the author possesses enabling him to disseminate the glad tidings. The book remains a thoroughly valuable annual in which necessary information is given in a very convenient form.

## OXYGEN AND ANÆSTHESIA.

THE third of the series of post-graduate lectures on General Anæsthesia, delivered under the auspices of the Dental Board, was given by Dr. Leonard Hill and appeared in the *British Dental Journal* of April 15th. A large part of the lecture was devoted to a convincing explanation of the dangers associated with chloroform and should be highly valuable in dissuading any dentists, if such there be, who still regard that drug as a suitable anæsthetic for common use in dental work. The physiological aspect of the anæsthesia produced by ether and by nitrous oxide, as well as that of ethylene, was also described. Dr. Hill would apparently like to see advantage taken of the enhanced effect of nitrous oxide and oxygen when given under an increased atmospheric pressure. He suggests that a suitable chamber might easily be constructed from part of a tube railway. We hope his remarks on this subject will catch the eye of some enterprising philanthropist; an easy road to fame appears to await him if he endowed the hospitals of London with "gas tubes" associated with his name. The all-important lesson—to avoid oxygen shortage in inducing and maintaining anæsthesia—was forcibly instilled into the minds of his hearers in more than one portion of Dr. Hill's valuable lecture.

## ON PREPARING THESES AND TECHNICAL PAPERS.

THE average candidate finds the task of writing a thesis one of the hardest obstacles placed in the path of qualification by his examiners. To all who see it looming ahead of them we commend an essay[2] by Sir Humphry Rolleston, which gives invaluable advice on the choice of a subject, the way to master it, and the best means of composition. Too commonly candidates are content to face their difficulties one at a time, but in this exceptional case it is worth while to meet trouble half way. Even in the comparatively early days of clerking or dressing, as Sir Humphry Rolleston points out, it is advisable to bear in mind the needs of the future and to take notes of suitable material.

The preparation of scientific papers in general is by no means easy, and an immense number of conventions are used in producing books and journals which cannot be observed by instinct. In a book[3] which we have received from Baltimore these are set out with admirable clearness. Brief sections deal with first steps in treating scientific data, plan and order of topics, subject-matter and arrangement, corrections and alterations in proofs and manuscript for printer, and kindred topics, whilst methods of abbreviation, citation, and illustration are satisfactorily described. This is a book which should be useful to the many medical men who have editorial work to do, and its perusal should go far to reduce friction between author, editor, and printer.

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[1] Who's Who. 1926. An Annual Biographical Dictionary, with which is incorporated "Men and Women of the Time." Seventy-eighth year of issue. London: A. and C. Black, Ltd. Pp. 3218. 42*s.*

[2] On Writing Theses for the M.B. and M.D. Degrees. 2nd ed. London: John Bale, Sons and Danielsson, Ltd. 1925. Pp. 28. 1*s.*

[3] Preparation of Scientific and Technical Papers. By S. F. Trelease and E. S. Yule. Baltimore: Williams and Wilkins Co.; London: Baillière, Tindall and Cox. 1925. Pp. 113. 7*s.* 6*d.*

# THE LANCET

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## THE NEEDS OF OUR HOSPITALS.

The National Emergency has caused anxiety, and sometimes serious inconvenience in nearly all the hospitals. Their principal needs are personnel, power and provisions, and in places there has been interference with all of these. At the London Hospital, for instance, the initial difficulty was the transport of staff; this was overcome fairly satisfactorily by the use of ambulances and private motors, though some medical and lay workers who were insufficiently labelled were held up and even roughly handled. The next serious trouble was due to the action of the Stepney Borough Council in cutting off the supply of electric current by day so as to prevent its use for industrial purposes. No power was available till the evening, for the X ray plant, Tyrnauer baths, Finsen light, sterilisers and instrument-sharpening plant, the electric lifts were thrown out of action, whilst the difficulties of maintaining efficiency were enhanced by a heavy fog on Wednesday morning. The Chairman of the Hospital, Lord Knutsford, met the Borough Council on Thursday, and this body consented to restore the supply of current, but were unable to give effect to this decision. The out-patient department however, has had to be closed because few patients can attend and because it is difficult to maintain the staff; cases are dealt with in the receiving-room, which has not been overcrowded, and as yet there have been few injuries apart from motor-car accidents. News from other hospitals tells much the same story. At the City of London Hospital, Victoria Park, electric current has been cut off during the day At St. Bartholomew's, there has been some delay in getting patients to and from the hospital, and there as elsewhere private cars could usefully help. Valuable assistance of this kind has been given at St. Thomas's, where there would otherwise have been considerable difficulty in discharging patients to their homes in the country. At this hospital operations which can safely wait are being delayed so as to set free beds for emergency. At Charing Cross Hospital, there has been no abnormal number of casualties and transport difficulties have been removed by the offer of private cars.

On the whole, hospital food supplies are arriving satisfactorily in the London area, with the exception of fish, which is difficult to obtain in adequate quantity. St Thomas's, for instance, is receiving only about half of its normal supply. There is also some shortage of potatoes and green vegetables, especially at the last hospital, and practically every hospital would be grateful for gifts of this kind. Motorists coming to London might well bring with them small quantities of vegetables from their gardens and hand them in at institutions on their route. Milk is reported as sufficient. Difficulty in the maintenance of hospitals is of course inevitable in the early stages of so serious an upheaval, but there is no section of the community which desires to put the slighest inconvenience in the way of hospital administration, and the unfortunate incidents that have occurred are simply the result of misunderstanding. They should give rise, therefore, to no kind of ill-feeling, and their repetition can best be prevented by the plainest possible advertisement of hospital supplies and the fullest explanation of hospital needs to those who are obstructing their fulfilment.

## THE DOCTOR'S RISK IN CERTIFYING.

We stated last week the legal decision which proved fatal to Mr. Harnett's action against Dr. Fisher for alleged negligence in certifying him under the Lunacy Act more than 13 years ago. Another point of law, submitted on behalf of Dr. Fisher but rejected by Mr. Justice Horridge, deserves further discussion, for learned judges do not appear unanimous in their views upon it, and the point is of vital importance to medical practitioners who are concerned with certification under the Act. Mr. Harnett's grievance is his detention in an asylum. The detention was the result of a reception order. The reception order was not the act of Dr. Fisher, but of Colonel Locke, the magistrate who after due examination of the facts signed the order. The reception order is a judicial act; if the magistrate is not wholly and solely responsible some measure of privilege and protection must be conceded to the doctor who merely provides the material which the magistrate examines. If the doctor does not know the limit of his risk he can hardly be expected to take chances with the Lunacy Act. The criminal position is clear. Wilful mis-statement of a material fact is punishable as a misdemeanour (under Section 317 of the Act). What is the legal liability—apart from criminal responsibility for wilful mis-statement—when the doctor acts in perfect good faith?

If statements, possibly defamatory, are made in connexion with the petition there seems no actionable liability for libel. In Hodson *v.* Pare ([1899], 1 Q. B. 455) a man applied under the 1890 Act for the detention of his wife as a lunatic. In answering the question in his particulars as to whether any near relative had been afflicted by insanity, he made the reply: "Yes, her mother, with puerperal fever." The mother brought a libel action, whereupon the husband successfully applied to have the statement of claim struck out as disclosing no cause of action. The Court of Appeal held that the alleged defamatory statements were not actionable. "I have come to the conclusion," said Lord Justice A. L. Smith, "that a justice sitting to administer the lunacy laws, as in this case, is exercising a judicial function and, if that is true, the occasion was absolutely privileged." "The justice," said Chitty, L.J., "has ample power to personally examine the alleged lunatic and to call for the production of further evidence and to hear that evidence on oath. There is thus a statutory judicial proceeding." Lord Justice Chitty's observations hardly need elaborating by reference to the well-known procedure governed by Sections 4–6 of the Lunacy Act. The reception order is, in the words of the statute, "made by the judicial authority"—i.e., the magistrate—who has first to "consider the allegations in the petition and statement of particulars and the evidence of lunacy appearing by the medical certificates and whether it is necessary for him personally to see and examine the alleged lunatic." The judicial authority can, if satisfied, make the order forthwith; if not so satisfied he must appoint an early date for considering the petition and may make such further inquiries as he may think fit. If he takes time to consider the matter the Act gives him the choice of three courses—he may make the order, dismiss the petition, or adjourn the proceedings for further information. When the magistrate has this ample discretion the medical practitioner who furnishes the material upon which that discretion is exercised seems to play a part not unlike that played by a mental specialist who gives evidence in a criminal trial as to the insanity of the accused—evidence which may lead to the detention of the accused during His Majesty's pleasure. In Everett *v.* Griffiths Lord Reading, L.C.J., summed up the position in words afterwards quoted by Lord Finlay in the House of Lords ([1921], A.C. at p. 669). Dr. Anklesaria, said Lord Reading, was consulted in that case "in an advisory capacity. His opinion was expressed to the justice of the peace in good faith, and the justice acted upon it. There is an interposition of the act of the justice which constitutes the detention. It is not the medical certificate, it is the order of the justice, which brings about the detention." Lord Finlay, however, disagreed with Lord Reading, and in Harnett *v.* Fisher Mr. Justice Horridge followed Lord Finlay.

It had been argued for Mr. Harnett that no order could be made by the magistrate without the certificate of the doctor. Where the certificate of the doctor was obtained with a view to obtaining an order the negligent giving of a certificate (and the jury had found that Dr. Fisher was negligent) was a direct cause of the reception order and detention. This argument Mr. Justice Horridge adopted in deciding the point against Dr. Fisher before deciding the further point of law (under the Statute of Limitations) in Dr. Fisher's favour. Lord Finlay had said, in the case already cited, "But for the existence of the certificate the order could not be made at all. And further we cannot leave out of account the effect which that certificate might, and in all probability would, have on the mind of the justice who made the order. Not only is the medical certificate a condition precedent to the making of the order, but it may also have a most important effect in leading the justice to the conclusion that the person is a lunatic." Everett *v.* Griffiths was really decided not on the ground of the immunity of the medical practitioner, but on the ground that there was no evidence of want of reasonable care on his part. Lord Finlay's remarks on causation are, however, important. Lord Reading had said that the medical certificate was a *causa sine quâ non*, but not a *causa causans*. But lawyers take the view that, where there are several links in a chain of causation extending from initial negligence to a subsequent injury, the person guilty of the original negligence will still be the effective cause if he ought reasonably to have anticipated the intervention of the links and to have foreseen that, if they intervened, the result would be that his negligence would lead to mischief. Mr. Justice Horridge thus held that Dr. Fisher, guilty (according to the jury) of the original negligence, ought reasonably to have anticipated that the reception order would follow; therefore the making of the order was not a fresh independent cause, and Dr. Fisher was liable for the consequences of his negligence even though the actual reception order was made by the magistrate.

Mr. Harnett, of course, could obtain no damages from Dr. Fisher unless Dr. Fisher owed him a legal duty to use reasonable care. Such a duty does not always exist. In Thompson *v.* Schmidt (1891, 56, J.P. 212) a doctor's certificate was given under Section 20 of the Lunacy Act; it was not a condition precedent to the *detaining of an alleged lunatic*. The relieving officer requested a certificate before taking the plaintiff to Hoxton Infirmary. The Act did not require a certificate; the doctor was merely employed by the plaintiff's wife to satisfy the mind of the relieving officer before he acted on his own responsibility. Even if the relieving officer would not have acted without the doctor's certificate the certificate, it seems, was not in any legal sense the cause of the relieving officer's act; the doctor had no liability towards the plaintiff. But the circumstances in Thompson *v.* Schmidt were not the same as in Harnett *v.* Fisher. The normal duty of a medical practitioner to use care in signing a certificate was [illegible] in 1862 in Hall *v.* Semple (3 F. & F., 337). Mr. Justice Crompton, trying a case under the lunacy law then in force, told the jury that an action would lie, even in the absence of any spiteful or improper motive or of wilful false statement, if a doctor assumed the duty of certifying without due and proper examination and without making such inquiries as were necessary and such as a medical man ought to make, "not in the exercise of the extremest possible care, but in the exercise of ordinary care." When the authority of Hall *v.* Semple was considered in Everett *v.* Griffiths by the Court of Appeal ([1920], 3 K.B 163) the judges were divided. Lord Justice Atkin thought there was a duty owed by the doctor to the person certified, and that on a breach of that duty the latter could obtain damages. On the other hand, Lord Justice Scrutton thought that "a doctor who voluntarily certifies under the Act of 1890, not at the request of the person examined, but as evidence for the guidance of an independent authority, incurs no liability to the person examined, as there is no legal relation between them." In the House of Lords Lord Cave said he expressed no final opinion upon this point.

Although, therefore, Mr. Justice Horridge had good authority for deciding against Dr. Fisher on the aspects of the case discussed above, there is sufficient judicial uncertainty to make it desirable that the point should some day be settled, beyond all dispute, by the highest legal tribunal. A stay of execution was granted to Mr. Harnett when judgment was recently given against him. If he appeals on the legal point unfavourable to himself it may be possible to get a final decision upon the other legal point on which he succeeded.

## ROYAL SOCIETY OF MEDICINE.

About 50 members attended a meeting of the Section of Surgery on May 5th to hear Dr. W. E. Gye spead on the Origin of Tumours, but Dr. Gye was prevented from attending. It is intended to hold the meetings arranged for the coming week. The society is organising an Emergency Medical Service to work in an area bounded by Park-lane and Edgware-road, Regent-street, Piccadilly and Marylebone-road. Doctors are asked to be in readiness with cars and first-aid necessaries during one hour of the twenty-four. It will be recalled that an emergency surgical aid corps was formed during the war. Part of the society's staff is being housed in its Wimpole-street building, and lodging there for 50 persons has been offered to the Mayor of Marylebone.

# Medical Societies.

## MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

At a meeting of this Society on April 30th a further discussion took place on this subject. Dr. Wilfrid S. Fox, the President, was in the chair.

Dr. A. Lacapère, consulting physician to the St. Lazare Hospital, discussed at length the conditions under which a syphilitic might be authorised to marry. Theoretically marriage should not be allowed until there was absolute proof of non-recurrence, and of inability to contaminate the partner or transmit syphilis to the offspring; but absolute proof of cure could not be established in syphilis, any more than in tuberculosis or other chronic infections. Negative reactions did not furnish an absolute security. Cure was more likely the sooner the treatment was commenced. A series of injections of "914" within a week or two after dangerous contact, followed by clinical and serological observation for a year, should make it possible to permit marriage to take place in the absence of anything abnormal. If there was a primary sore, in spite of a negative Wassermann, still there was hope of obtaining complete sterilisation in a relatively short time, and the treatment, according to the French school, should consist of a series of intravenous injections of "914," followed, after a rest period, by a second series of injections, even a third or fourth, though in these later stages he preferred to use insoluble bismuth preparations. The duration of treatment should be 10 to 12 months, followed by an observation period of 8 to 12 months, after which, if the reaction remained negative, and the result of a provocative injection of "914" was satisfactory, the person might be permitted to marry. In cases in which treatment was started after the appearance of the positive reaction he frequently had recourse to intramuscular injections of "914," or, when these were not well taken, to injections of sulpharsenol, alternating with bismuth. Two, sometimes more, series of treatments were necessary; 18 months was the minimum for treatment; injections of bismuth should be continued for a year after the tests had become negative, and the tests should be negative for 12 or 18 months before marriage was authorised. He also spoke of the treatment of syphilis in the tertiary stage, and said that if the syphilitic had not exhibited any irremediable symptom such as angina pectoris or tabes, the practitioner might concentrate upon securing the disappearance of the actual symptoms, upon getting a negative result in the tests, and upon keeping the patient under observation, making tests at regular intervals and giving an occasional provocative injection. The precautions must be greater in the case of a woman than of a man. If a woman had had syphilis, the results might be seen in abortions or infected children, in spite of negative reactions for a period of years. The woman, therefore, should have treatment during pregnancy, and the children should be watched carefully. He believed that syphilis could not be transmitted to the child by the father if the mother had not first been infected, though the proof of this conjugal contamination was often very difficult to obtain. In the treatment of the expectant mother he found the best results followed arsenobenzol, given by intravenous or intramuscular injection.

Dr. R. C. JEWESBURY contributed a statistical paper analysing the work of the special clinic for congenital syphilitic children which was started six years ago at St. Thomas's Hospital. Two hundred cases of congenital syphilis seen in the clinic involved an investigation of 957 pregnancies of the mothers. The pregnancies in 178 cases had terminated in miscarriages. Of the 779 children born, 81 were shown to be free from syphilis, 274 gave no sign of syphilis, though for various reasons it was not possible to be quite conclusive, 150 were suspected of having syphilis, and congenital syphilis was proved in 270 cases. The history of the father was generally difficult to obtain, and in only 13 cases could the date of his infection be discovered. The longest period of infection previous to the birth of the child was 11 years, and the average period five years. In the case of the mothers the longest period of infection was nine years, and the average three and a half years. Only a small proportion of the women had received adequate treatment. Of the children who came under observation, the largest number were referred for eye trouble, others for rashes, wasting, pains in the limbs, and mental defect. The 200 actual cases of congenital syphilis seen at the clinic were divided into three groups according to age, and it was in the oldest group, from 6 to 14 years of age, that the eye symptoms were most noticeable; also in these the largest proportion of positive Wassermann reactions was obtained. The Wassermann test could not be relied upon in very young children.

Dr. J. H. SEQUEIRA communicated some observations made by his colleague, Dr. Palmer, now obstetrician at King's College Hospital and formerly of the London Hospital, regarding over 2000 primiparæ in the antenatal clinic of the London Hospital and associated lying-in homes in the East End of London. In all these cases a Wassermann test was done, and in only 2 per cent. was there evidence of syphilis. That was a point worthy of consideration, he thought, because current propaganda had rather exaggerated the danger of communication in the early months of marriage, and when one remembered that this mass of material was drawn from an East End population, the lowness of the syphilitic reaction was rather gratifying. It must be admitted that this 2 per cent. did not represent the whole of the infection, because it left out the miscarriages. He thought it quite a common experience for there to be a history of one or perhaps two quite healthy children, followed by a series of miscarriages, or else the subsequent children showed evidence of congenital syphilis. With regard to advice on the matter of marriage, the difficulty arose in the case of a syphilitic who had a positive Wassermann in spite of lengthy treatment and proposed to get married. The duration was important, for time as well as mercury was a factor in the cure of syphilis. Dr. Jewesbury's communication bore out what he had himself so long advocated, the value of antenatal treatment of syphilitic women.

Dr. A. C. PALMER added a few details to the figures given by Dr. Sequeira. The primiparæ numbered 2010, but a positive Wassermann was obtained in only 21.

Mr. WANSEY BAYLY said that both the papers appeared to show that if the parents received adequate treatment there was little danger of the children developing syphilis. There was a tendency to exaggerate the risks of syphilis. In his view there was no reason why marriage should not be permitted provided the patient had received a course of anti-syphilitic treatment before marriage and signified willingness to continue the treatment after marriage. He himself had permitted a number of patients to marry after only one year of treatment—they had continued treatment after marriage of course—and so far such marriages had not produced either syphilitic children or domestic unhappiness.

Dr. HENRY MCCORMAC asked what was to be done in chronic cases which, in spite of treatment, it did not seem possible to get a negative Wassermann. He thought that in the case of a man with syphilis of sufficiently long standing, he was unable to communicate the syphilis to his wife, and if the wife was not infected she would have healthy children; but in the case of a woman with chronic syphilis, although she might not be able to communicate the disease to her husband, she was capable of imparting it to her children.

Dr. LACAPÈRE, in reply, said that the persistence of a positive Wassermann was a dangerous sign of the possibility of general paralysis, and he thought that unless the case was shown to be one of very old-standing chronic syphilis—i.e., up to 12 years—it was unwise to allow a man with a positive Wassermann to marry.

# Medical News.

A complimentary Dinner to Sir St.Clair Thomson President of the Royal Society of Medicine, is to be given by the Section of Laryngology at the Edward VII Rooms, Hotel Victoria, Northumberland-avenue, on Firday, June 4th. Tickets from Mr. Norman Patterson, 82, Portland-place, London, W. 1.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—The Maudsley Lecture on the Prevention of Insanity, will be delivered at the British Medical Association House, Tavistock-square, W.C. 1, by Prof G. M. Robertson of Edinburgh, on Tuesday, May 18th, at 3 P.M.

On Tuesday afternoon, May 4th, Sir Humphry Rolleston unveiled at the Dreadnough Hospital, Greenwich, a presentation portrait of the late Sir Sydney Russell-Wells, painted by his nephew, Mr. John Wells. In asking the Seamen's Hospital Society to accept the portrait for the staff room of the Hospital, Sir Humphry Rolleston spoke of Russell-Well's great abilities as committee-man and chairman, the clearness conciliation and conviction with which he spoke, his complete mastership of procedure, and his gift of exposition freely utilized for the benefit of the Seamen's Society.

*At the annual conference of the National Council of Public Morals, held last week, Sir Thomas Horder* contributed to the discussion on How to improve the British Race. The *doctors, effort, he said, should* be to arouse in people the recognition of individual duty and service in respect of racial betterment. After stating his case the patient often said: "Now what are *you* going to do about it, doctor?" Whereas the pertinent question should really be: "What do you advise *me* to do about it, doctor?" Health, said Sir Thomas Horder, is always the resultant of the moral control by the individual of the conditions in which he finds himself. Starting off with a capital of health he can by thrifty stewardship add to this, establish it, and contribute to the improvement of the race by handing down an improved constitution to his children. Or, squandering his capital by living upon it, he can pass on a bankrupt inheritance and so increase the elements that make for degeneracy. Clearly, he concluded, the issue lies with the individual.

THE DANGEROUS DRUGS ACTS.—Sir William Willcox addressed a joint meeting of the South-West London Medical Society and the South-West London Chemists Association held on May 5th, on the application of the Dangerous Drugs Acts by the physician and the pharmacist. In view of the great inequality of effect of these Acts on the medical and pharamceutical professions, it would be equitable, he said, for dangerous drugs to be supplied only on medical prescription and not to be dispensed by a medical practitioner except in emergency or in rural districts where a pharmacist was not available. This procedure had been in operation in the case of insured patients, and it worked admirably. It would, he thought, involve no financial sacrifice on the part of the medical practitioner and would relieve him of the troublesome work. The double check, namely, the writing of the prescription by the physician and the dispensing by the pharmacist would afford a double safeguard against error.

WELFARE CENTRES AND BIRTH CONTROL.—In the House of Lords on April 28th, Lord Buckmaster moved "that His Majesty's Government be requested to withdraw *all instruction* given to, or conditions imposed on, welfare committees for the purpose of causing such committees to withhold from married women in their district *information*, when sought by such women, as to the best means of limiting their families" and after a full discussion in which the Marquess of Salisbury, the Archbishop of Canterbury, Lord Balfour of Burleigh and others took part the *motion was agreed to by* 57 votes to 44, the Lord Chancellor stating that they were not expressing any opinion for or against birth control, nor whether propaganda in its favour should or should not be lawful.—The Paddington Borough Council rejected by 21 votes to 20 a *motion by Sir John Ramsay* to give medical officers of welfare centres the same freedom as other medical practitioners in giving advice to patients on methods of birth control.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE ASSOCIATION.—On Tuesday, May 11th, at 4 P.M., Mr. M. S. Mayou will give a demonstration in clinical ophthalmology at the Central London Ophthalmic Hospital, on May 12th at 2.30 P.M., Mr. Stanford Cade will give a demonstration in clinical surgery at the Westminster Hospital. These *are free to* all members of the profession. The courses arranged at the London Lock, Central London Throat. Nose and Ear, Royal Westminster Ophthalmic, and Maudsley Hospitals are cancelled. The course at the Infants Hospital will not be held unless a settlement is reached by May 8th. The course at the Royal Waterloo Hospital may take place. (Information is obtainable from the Secretary of the Fellowship, at 1. Wimpole-street. London, W.1. or Tel: Mayfair 2236.)

The annual congress of the Ophthalmological Society of the United Kingdom was held in London from April 29th to May 1st. Sir John Herbert Parsons presided. A report of this meeting will be published later.

# Births, Marriages, and Deaths.

## BIRTHS.

**ALEXANDER.**—On April 23rd, at Overstrand Mansions, Battersea, the wife of Captain R. H. Alexander, M.C., R.A.M.C., of a son.

**GRIFFITHS.**—On April 22nd, at 90 Harley-street, the wife of H. E. Griffiths, M.S., F.R.C.S., of a daughter.

**MATHIAS.**—On April 18th, at Tenby, the wife of Hugh Mathias, F.R.C.S., of a son.

**NORMAN.**—On Apirl 25th, at Chatham, the wife of Col. H. H. Norman, C.B.E., R.A.M.C ,of a daughter.

**RICHMOND.**—On April 20th, at the Lawn, W., the wife of Dr. D. S. Richmond, of a daughter.

**TOOGOOD.**—On April 25th, at Goden Bank, Liskeard, Cornwall, the wife of Sherman Toogood, M.A., *M.R.C.S., of a daughter.*

## MARRIAGES.

**EATONPEARD.**—On April 29th, at Emmanuel Church, West End, Dr. Douglas Eaton to Hiliary, daughter of the later Lieut.-Colonel Peard, C.M.G., R.A.M.C.

***ELKINGTON — RICHARDSON-BUNBURY.*** — *On* April 29th, at Blatchington Church, Guye Waterman Elkington, M.B., M.R.C.P, to Kathleen, only daughter of the late Mr. Moutray Richardson-Bunbury, of Seaford.

**HUTCHINSON—WALLEY.**—On Apirl *30th*, at St. Matthew's, Oakley-square, N.W. Donald H. A. Hutchinson, M.D., to Constance E. Walley, Edin.

**RHODES—MOLYNEUX.**—*On* April 28th, at St. Mary's, Allithwaite, Richard L. Rhodes, M.A., B.Ch., to Kathleen Margaret, youngest daughter *of* Mr. *and* Mrs. A. J. Molyneux, of Allithwaite Lodge, Grange-over-sands.

**SLOT—*COHEN*.**—On *Arpil 27th*, at the West London Synagogue, Gerald Maurice Slot, M.D., M.R.C.P., to Evelyn Irene, younger daughter of Mr. *and the* late Mrs. P. Cohen, of 42, Aberdare Gardens, Hampstead.

**SHERVILL—MOFFATT.**—On April 28th, at St. Merryn, Cornwall, Edgar Arthur Shervill, M.R.C.S., to Jane Elizabeth Forbes (Jean), only *daughter of the* late Thomas Forbes Moffatt and Mrs. Moffatt, of Trescore, St. Merryn.

## DEATHS.

**BURNS—GEMMEL.**—On *April 28th*, suddenly, at his residence, 114, Princes-road, Liverpool, Dr. Archibald Burns Gemmel, C.B.E., *retired* Brebet-Colonel R.A.M.C. (T), sometime commanding First Western General Hospital Fakazerley.

**DUTCH.**—On April 30th, after a long illness, at his residence, 8, Berkely-street. London, W. 1, Major Dutch, M.D., T.D., aged 64, who devised a number of ingenious medical instruments.

**FREDERICK.**—On April 28th, at 1, Cambridge-road, Seven Kings, Edward Gurdon Frederick, M.R.C.S, L.R.C.P., aged 54.

***FRANCE.***—On April 30th, *at a nursing* home in London, Frederick Ernest (Eric) *France*, N.B., B.S.Durh, late Capt, R.A.M.C. (T) in his 59th, year, sometime member of the Medical Resurvey Board, Ministry of Pensions.

**JOYNT.**—*On April 27th*, at 12, Eliot-place. Blackheath, of uræmia, Edward Hearne Joynt, retired Liuet.-Colonel, R.A.M.C.

**NANKIVELL.**—On May 1st, very suddenly, at Bude, Frank Nankivell, M.D., of Port Isaac, aged 74.

**Rivers.**—On April 23rd, at Worsboro Bridge. Barnsley, Walter Courtenay Rivers. M.R.C.S., D.P.H., a keen student of *Tuberculosis* and Sociology.

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# THE LANCET

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## ÆQUANIMITAS MEDICA.

No quality in the physician or surgeon, said William Osler in a famous address, takes higher rank than imperturbability and the general strike gave the medical profession ample scope for the exercise of this essential virtue. Below is set out the spirit in which the official medical department of London carried out its varied duties, and all the evidence which has reached us goes to show that the same spirit ruled in every part of the country and in every kind of medical practice. What has been happening will only have its effect in the distant future, for the physical forces which deteriorate the health of the nation do not produce their result at once, but have their repercussion long afterwards. For this reason, if for no other, medical officers were wise not to abandon their routine duties for other spheres which appeared more attractive or fruitful at the moment. The temporary upset in the hospital services showed signs of amelioration even before the situation was relieved. Provision was made in many places for such emergencies as could be foreseen; apart from these, there has probably never been a time when the carrying on of medical practice in its every detail of daily routine was of more importance to the national weal. Practitioners do well to cultivate—to recall another phrase of Osler's—such a judicious measure of obtuseness as enabled them to meet the exigencies of practice with firmness and courage.

Sound organisation and generous assistance from the public enabled the metropolitan general hospitals to accommodate themselves rapidly to the conditions which followed the sudden dislocation of many public services. The difficulties which faced them at first were surmounted and generally speaking their work went on almost as usual. The mechanism of a large general hospital is widespread and complex; the smooth inter-working of many departments is needed to secure efficiency, and so many people—staff and patients—have to enter and leave each ward every day that any serious interruption of communication might easily have had serious results. In many hospitals preliminary arrangements were made in case of the emergency arising, for although the Government was able to guarantee the free movement of food-supplies, there were other essential services to be arranged: the conveyance of in-patients to and from their homes, the regular arrival of the lay and medical staffs, the replenishment of stores other than food, the maintenance of light and heat. In these and other matters involving internal organisation almost complete success was attained. During the first two or three days there was a little scarcity of fish and fresh vegetables, but the supply of all kinds of food became ample and regular, and there was at no time any real difficulty about milk. Obstacles to the movement of personnel, which at first looked serious, were quickly removed by owners of motor cars who placed an immense fleet of vehicles of all descriptions at the disposal of the hospitals. Regular services were organised for bringing in the staff and returning them to their homes, for the conveyance of doctors who had no cars of their own, and for the use of patients, some of whom had to be carried considerable distances. Here and there some members of the staff slept on the premises. The out-patient departments were necessarily chiefly affected, as out-patients are drawn from all parts of London and the suburbs, and transport difficulties at first reduced the attendance to a minimum. An increase in the number of trains and omnibuses, however, rapidly removed this disability, and on Monday last a larger number of out-patients attended at St. Bartholomew's Hospital than during the whole of the previous week. In the medical schools of the teaching hospitals systematic lectures were given, although practical courses were largely suspended owing to the fact that most of the students in a position to do so enrolled themselves as special constables or volunteers in essential services. For a time one hospital or another laboured under serious difficulties because light and fire were not available, but last Saturday supplies were partially restored, and on Monday they were extended to out-patient departments. The best commentary on the rumours of disturbances in the East End is afforded by the fact that there was no unusual pressure upon the Poplar Hospital for Accidents.

Turning to the public medical services in London, we understand that the work of the medical department of the London County Council was carried on without any dislocation whatever. The initial difficulty of transport was met partly by voluntary provision of private cars, partly by willing acquiescence of the staff in covering the ground on bicycles or on foot. Of the 00 doctors engaged in medical inspection, of the 300 or more school nurses, and of the 03 care committee organisers none failed to report for duty, although in individual cases the work was not done without some sacrifice of sleep, physical exhaustion, and even blistered feet. The voluntary attendance of children at cleansing stations did not appreciably drop off even after this measure ceased to be compulsory in certain areas. Notification of infectious disease among school children was made in envelopes prepaid at full postal rate to avoid delay in this essential kind of information. Swabs and culture tubes for the diagnosis of diphtheria were circulated by the private cars of the medical staff. The work of the chemical branch was unimpaired except in so far as milk samples for the present were not accepted by parcel post. Work in connexion with midwives, the Children's Act and tuberculosis went on as usual, the difficulty in taking patients to sanatoria being met by the offer of Red Cross ambulances for the purpose. The health of London during the emergency gave no cause for anxiety. There was little or no increase required in the supply of free meals for necessitous children, and the continuous efforts of the medical, dental and nursing staff maintained a full service of inspection and care. It would not be vainglorious to claim that a large measure of equanimity was achieved.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXXII.—TREATMENT OF DIABETES.

### II. INSULIN TREATMENT.*

THE ideals set out in the article on dietetic treatment cannot be achieved in every case but should always be aimed at. Insulin does not cure diabetes, but it can restore a comatose patient to life and will make most patients feel quite well. It is not necessary for every patient. If a patient is over 50 years and can take a diet containing 50 g. of carbohydrate, and enough protein and fat to make up an adequate caloric value, insulin is not essential, though a small dose (5 units) will make the patient feel better. To children or young adults small doses of insulin should certainly be given, as it is essential to keep the patient in the best possible health with the least possible strain on the beta cells of the islands of Langerhans. If the carbohydrate cannot be raised to 40–50 g. without causing glycosuria or a raised fasting value of the blood-sugar, insulin is necessary. The popular belief, "once insulin, always insulin," is true in the sense that if a patient has been restored from coma and still needs 50 to 100 units a day he will probably die if the insulin is not given. But in mild cases it can always be stopped, provided that the carbohydrate is simultaneously reduced. When this alternative is offered the patient often prefers to continue the insulin. Except in emergencies, an attempt should first be made to control the condition by means of diet, since the discovery of the correct dose of insulin is thus made easier. Estimation of blood-sugar is not essential, but greatly shortens the time taken in balancing insulin and carbohydrate. The urine passed during the day should be collected three-hourly and as many specimens of night urine as possible without disturbing the patient. Benedict's solution should be used for sugar tests and the results charted. If the urine still contains sugar, or the blood-sugar is still too high, in spite of careful dietetic treatment, the following régime should be adopted.

#### *Standard Régime.*

A small dose of insulin, 5 units, should be given before breakfast and the urine of each three-hourly period tested for sugar. If the urine contains sugar before breakfast, the blood-sugar is probably above 0·20 per cent. and the urine in the period 0–3 hours after the insulin is certain to contain sugar. If the dose of insulin is sufficient to lower the blood-sugar below the threshold of the kidney for sugar (0·18 per cent., as a rule), no sugar will be present in the period 3–6 hours after insulin. If sugar reappears in the 6–9 period it means that the blood-sugar is again above 0·18 per cent. In this case the same dose should be persevered with for three days to see if the urine in the 6–9 and subsequent periods will become sugar-free. If this does not occur the dose of insulin must be increased to 10 units, and the same procedure adopted. If, however, the urine in the 3–6 period still contains sugar after a further three days' treatment, the insulin should be increased to 15 units and the effect watched. If this fails to render the urine sugar-free in the 3–6 period, an evening dose of 5 units should be given. This dose can be increased by 5 units every three days up to 15 units. If the urine still contains sugar in the 3–6 period, it is well to have an estimation of the blood-sugar made if possible. If the condition is still resistant, the dose can be increased by 5 units in the morning—i.e., 20 units—followed by 5 more units at night every three days until the urine does become sugar-free.

In practice it is rare for the condition to be so resistant unless the patient has another disease present which is making the diabetic condition much worse—e.g., gangrene of the leg. When an adequate dose of insulin is given and the urine is sugar-free throughout the day, it is advisable to have an estimation of the blood-sugar made before the insulin is given, so as to know whether the blood-sugar is below 0·13 per cent. or is only just below the threshold—0·18 per cent. If it is not possible to make estimations of the blood-sugar, some idea may be obtained by collecting the urine every hour after the usual time for the insulin injection, but omitting the insulin. If glycosuria occurs in any of the first two specimens the blood-sugar was probably above 0·13 per cent., provided always that the threshold of the kidney is set at the normal level. When the blood-sugar has been reduced to normal the diet can be cautiously increased, adding carbohydrate as fruit or milk in proportion of 1 unit of insulin to 2 g. of sugar. It is unwise to increase carbohydrate above 50 g. in a severe diabetic, and this amount is just sufficient to provide enough variety to make the diet palatable. The urine passed just before the insulin is given should be tested for sugar.

#### *Hypoglycæmia.*

As the patient improves, there may be symptoms of hypoglycæmia. The mildest are sweating, hunger pains, pallor, a feeling of limpness, dizziness, and tremor of the hands. Rather more severe ones are numbness of the hands or face and diplopia. The serious signs are (1) a state of coma resembling a deep sleep from which the patient cannot be roused; (2) a fit, rather like an epileptic fit, to which children are liable; (3) delirium.

For the mild attacks it is sufficient to take some of the food which would be eaten at the next meal, or some orange juice, or two lumps of cane sugar. If this does not relieve the symptoms more sugar should be eaten.

For the severe attacks, when a patient is unable to swallow, an injection of 15 minims of 1 in 1000 adrenalin or 1 c.cm. of pituitary extract will restore the patient to consciousness within five to ten minutes as a rule. When he recovers he should be given six lumps of cane sugar. If the adrenalin fails to restore consciousness in 30 minutes, it is advisable to give 200 c.cm. of a 5 per cent. solution of dextrose per rectum, or intravenously if the patient does not improve.

The patient should be able to recognise these symptoms, and the dose of insulin should be reduced by two or more units according to the severity of the reaction. A common cause of overdose is the taking of unwonted muscular exercise which burns up some sugar. This can be allowed for by taking less insulin or more carbohydrate. The patient's relations should know how to treat an overdose, and sterules of adrenalin should be at hand. The patient should always have sugar in his pocket or in a bag hung round the neck; he should carry a notice stating his condition and asking that adrenalin should be injected and sugar given if he becomes unconscious. This is a necessary precaution, since once the patient has become unconscious diagnosis is difficult.

#### *Reasons for Increasing Dosage.*

The dose of insulin must be increased greatly (1) if the patient develops another infection, (2) if diabetic coma ensues. Any infection is likely to cause some hyperglycæmia, or even glycosuria, and permanent decrease in sugar tolerance may ensue unless insulin is given in adequate amounts. The dose of insulin should be increased by either 2 or 4 units for mild diseases, such as colds in the head, small pimples or boils, even though no sugar has appeared in the urine. When a mild infection is over the dose may be reduced; after a severe infection it is advisable to wait for the first signs of an overdose. If the infection has been severe enough to cause glycosuria it may be necessary to give large doses of insulin. If possible, estimations of the blood-sugar should be made, but if this cannot be done the dose of insulin must be gauged by the presence or absence of glycosuria.

The urine should be collected, as far as is possible, in three-hourly periods and tested for sugar. Suppose that a patient, who has been taking 15 units in the morning and 10 in the evening, is taken ill during the night—e.g., with "influenza"—and the urine passed at 8 A.M. contains sugar, whereas it is usually sugar-free, in this case the usual dose of 15 units would be too small, and at least 20 units should be given. *The urine in the period 0–3 hours is certain to contain* sugar, but if the dose of insulin has been adequate there will be no glycosuria in the 3–6 period In this event the urine must be tested every three hours, and as soon as glycosuria occurs 10 units should be given. If, however, the urine for the 3–6 period contained sugar, the dose of insulin was inadequate and another 20 units should be given. If the urine for the next 3–6 period also contains sugar, the insulin should be increased to 25 units and its effect watched in the same way.

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* Part I., on the Dietetic Treatment of Diabetes, was published in THE LANCET of May 1st.

If this procedure is followed it is safe to give large doses of insulin every six hours without any real risk *of causing an overdose It is sometimes necessary* to give over 100 units, and even 200 units in the 24 hours. The night urine should be collected as far *as is possible* without awakening the patient specially, and if the condition is a grave one the insulin should be given six-hourly at night. When the urine for any 3–6 period is free from sugar, no insulin should be given until sugar reappears, and then the dose should be reduced by 5 or 10 units. During the convalescence there is some risk of an overdose, and it is a great advantage to know how the blood-sugar is behaving

### *Coma.*

As soon as the diagnosis is made (and after the blood has been collected for a blood-sugar determination), a large dose of insulin—50 units—should be injected. To avoid a possible overdose give 2 *oz. of* dextrose by *mouth or* by a stomach or *nasal* tube if the patient cannot swallow.

Collect urine by catheter three-hourly and test for sugar If the urine in the 3–6 period contains sugar, a further 25 units should be given. If the patient shows no signs of recovery, another 50 g of dextrose should be given together *with 50* units of insulin. A further dose of insulin should be given six hourly after testing the urine of the 3–6 period No insulin should be given if the urine of the 3–6 period is sugar-free *unless sugar is given at the same time*; there is then little danger of overdose As soon as sugar reappears in the urine insulin should be given again, the dose being reduced by 5 to 10 units.

*Other* measures should not be neglected; ol. ric., ℥ii., should be given with the first dose of sugar, and 10 oz. of water should be administered by a stomach-tube half hourly for three hours and then every hour. When the patient regains consciousness, the ordinary diabetic diet with 1 pint of milk added should be given, together with an adequate dose of insulin. A careful search should be made for the cause of the coma which is usually an infection of some sort. Any septic focus should be dealt with promptly.

### *Necessary Operations.*

Except in emergency operations, a preliminary course of treatment is advisable in order to discover *how* much food and insulin are required to lower the blood-sugar to normal. If possible local or spinal anæsthesia should be used as these interfere least with the sugar metabolism; the combination with them of gas and oxygen causes little disturbance so long as asphyxia is absent. If ether or chloroform has to be given, remember that ether causes a rise in the blood-sugar and inactivates insulin; chloroform causes no such rise but may damage the liver. In any case give 2 oz. of dextrose two hours before the operation together with 30 units of insulin. After the operation give food suitable to the ordinary patient, injecting a sufficient quantity of insulin The urine should be collected in three-hourly periods and the dose gauged accordingly. One pint of milk containing 21 g. of lactose requires 12 units. Any operation may lead to diminution in sugar tolerance, and so should be avoided unless a definite source of sepsis or a malignant growth is present.

GEORGE GRAHAM, M.D., F.R.C.P. Lond.,
Assistant Physician, St Bartholomew's Hospital

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF MEDICINE.

A MEETING of this Section took place on April 27th under the presidency of Dr. HUGH THURSFIELD, when Dr. E P. POULTON opened a discussion on the

### *Clinical Significance of the Respiratory Metabolic Rate.*

Discussion, he said, would probably be limited chiefly to the basal metabolic rate, in other words, the absorption of oxygen and the output of $CO_2$, as measured in the morning before breakfast—i e., about 12 hours after a light meal taken on the previous evening. It was desired, however, that in the discussion comments would extend over a wider field and that results would be produced after the taking of food and after exercise. Most of this work in recent years had been done in connexion with exophthalmic goitre, a subject which was very fully discussed by the Society not long ago.

*Technique.*—The measure of the direct heat produced was not used as a clinical method. The means of indirect calorimetry were divisible into the open circuit method and the closed circuit method. In the first of these, air from the atmosphere was breathed through a mask and valves, and the expired air was collected. The Douglas bag was usually employed in this country, and the method was shortened by substituting a spirometer for the bag, as the air was then measured during its collection. The calculation of the absorbed oxygen was complicated by the alteration in volume undergone by the inspired air during the act of breathing. The open circuit method had been used only for the determination of the carbon dioxide It would be generally admitted, he thought, that to measure either oxygen alone or $CO_2$ alone was a second best method, as the double determination gave a valuable check on the results, and the respiratory quotient could also be calculated. The closed circuit method was the more favoured, the oxygen alone being determined. A spirometer was filled with pure oxygen and the $CO_2$ was absorbed in the circuit, the rate of fall in the spirometer indicating the volume of oxygen absorbed.

*A New Apparatus.*—Dr. Poulton and Dr. Campbell had together devised a new type of apparatus, which was on view and was demonstrated at the meeting. With this apparatus it was claimed: (1) *that the* results for oxygen and $CO_2$ were *obtained during the* actual investigation, so that one could be certain from one five minutes to another how constant the metabolism was; (2) the *patient breathed* ordinary air, thus dispensing with any preliminary saturation of the tissues with pure oxygen; (3) the experiment could be prolonged *indefinitely if the* source of the oxygen was pure; (4) if required, a volumetric tracing of the respiration could be obtained.

*Normal Standards*—There were, he said, two standards in general use to obtain the normal figures for any individual. One was by calculating the normal metabolism from the body surface which was obtained from the person's weight and height from the Du Bois diagram. The other was by Dreyer's formula, in which only the body-weight appeared. It seemed to be the custom to take the body-weight at the time of the experiment, even though the patient *might* be either over-fat or wasted by disease. In the latter case the metabolism was lower than it would be if it had been calculated when the *patient* was of *normal weight* before the disease began. Dr. Poulton considered this was wrong, as the patient should be regarded as a physiological unit. Still, in the case *of the wasted* patient it might be defended, as the wasting had diminished his protoplasm and so *diminished* the metabolism. The weight of the *individual when* he was healthy, or the predicted weight, should always be used in calculating the metabolism. The chest measurement was of little value when the patient was either much wasted or over-fat; therefore it was necessary to fall back on his body length in order to determine what his weight should be; and it would be of value to have also such factors as the length of arms and legs.

*Clinical Significance.*—Practically all our fundamental knowledge on the variations in basal metabolism, said Dr. Poulton, was due to the work of Magnus Levy in connexion with thyroid disease. Its clinical significance in that disease could be regarded from two points of view—the diagnostic and the indications as to the effect of treatment. It was well known that in hyperthyroidism the basal metabolism was raised; on the other hand, it was lowered in cretinism, myxœdema, and the post-operative disease. It must not be forgotten, however, that such conditions as fever and leukæmia caused a raised metabolism, while starvation, under-feeding, and Addison's disease produced a lowered metabolism. Certain patients, though giving well-marked signs of Graves's disease, showed a normal metabolism, Means's name for these being "border-line" cases. Dr. Poulton considered that the basal metabolism was of great value as a guide to treatment—i.e., both in cases of exophthalmic goitre and as a guide to the right dosage of thyroid in cretinism and myxœdema.

*Obesity.*—He thought it likely that in the future respiratory tests would be more frequently used than at present in the treatment of conditions of obesity. Means found that the basal metabolism per unit of body surface was about normal in obese people, but this raised the question of what was the correct standard of comparison in such cases. If the metabolism of the healthy subject before he became fat was taken as the standard, then the basal metabolism in obesity was usually high, a peculiar fact seeing that adipose tissue by itself probably had a very low respiratory exchange, and the fatty tissue surrounding the patient also tended to prevent the loss of heat, despite some increase in the body surface. An increased metabolism of this kind might be due to increased food ingestion, on the analogy that fasting caused a lowered metabolism, hence over-eating and under-exercising might be regarded as the main cause, rather than some endocrine disturbance. Some observations by Plant seemed to show that it was not so much the basal metabolism which was at fault as the specific dynamic action after the intake of food, seeing that after a protein meal had been eaten the rise in the respiratory exchange was less than normal. Dr. Campbell and the speaker had conducted some observations on the effect on the respiratory exchange of a sufferer from severe bronchitis and asthma. They found that the respiratory quotient as the result of exercise was lower than among normals, the total oxygen intake remaining the same. Treatment with oxygen caused a rise in the quotient to about the normal. Hetzel and Long found low quotients for exercise in diabetic patients.

### *Discussion.*

Dr. C. M. **Wilson** spoke of the precautions which were necessary in order to secure actual measurements of the metabolic rate, and said the discussion would be of value in so far as it showed these measurements to supply something which clinical methods failed to show. There were two groups in which these measurements showed hyperthyroidism, and one in which they showed hypothyroidism. In the first of these one must place the nervous woman who had palpitation and perhaps loss of weight. A proportion of them were due to hyperthyroidism and would respond to suitable treatment; in other words, the diagnosis could be made in this way at a time when it would be impossible by clinical methods. Treatment commenced at this stage might be very effective, but started later on might prove difficult. Also there were cases in which it was very important to decide whether the condition was a non-toxic goitre in a nervous woman, or a toxic goitre producing nervous symptoms. The second group of hyperthyroidism in which the measurements were of value were cases of women whose outstanding symptom was menorrhagia, yet without abnormal pelvic signs. A proportion of these cases responded to X ray treatment of the thyroid gland. If the basal metabolic rate was normal, not only would the X ray treatment not be effective in stopping the menorrhagia, but it was not justifiable to apply the rays to an over-active thyroid. With regard to hypothyroidism, these metabolic measurements were not required for a frank case of myxœdema, but there was a class of case which stopped short of myxœdema and yet had a definitely lowered basal metabolic rate and which cleared up on the administration of thyroid. These measurements of metabolism did not indicate when surgery should be used and when X rays should be applied, but they enabled whatever treatment was chosen to be conducted with safety. If rays were being applied the measurements indicated when they should be stopped, and prevented the operator suspending them too soon. To operate surgically when the basal metabolic rate was rising was to ask for trouble.

Dr. H. **Gardiner-Hill** communicated a few general results arrived at by examining 4000 cases in the last five years. Determinations of the basal metabolic rate were of considerable value when the thyroid condition dominated the clinical picture. In pituitary obesity there seemed to be no definite alteration in the basal metabolic rate. In six cases of acromegaly the rate was within normal limits in two, slightly raised in two, unaltered in two. It tended to be below normal in fat children. Some cases of adrenal disturbance had also been investigated, but the metabolism was not altered. In cases of amenorrhœa in which there were no endocrine stigmata the rate was within +15 and −15 per cent. Two male castrates gave normal results, but of 12 female castrates 5 gave −60 to −35 per cent. and had definite symptoms of myxœdema. All the five had had double ovariotomy performed because of flooding. In the diagnosis of early or latent cases of myxœdema considerable help had been afforded by the estimations of the metabolic rate, particularly in differentiating them from other forms of œdema. He and his colleagues had seen 20 cases of sterility and repeated miscarriages in which the gynæcologist found no local cause, and in 10 of these there was a low metabolic rate. Pregnancy had been known to have taken place since in seven of them and the labour pursued the normal course to full term following the administration of desiccated thyroid.

Dr. R. D. **Lawrence** said he was not so optimistic as Dr. Wilson as to the value of these estimations in giving more information than did clinical investigation. During the last year he had made a practice of guessing what the figures would be, and in the vast majority of cases his guess was within 5 per cent. of the truth, except when the figures were very high. He personally found that the pulse, loss of weight, tremor, nervousness, and excitability gave sufficient indications. In minor classes of hyperthyrodism, when one could not be sure whether a neurotic element underlay the condition, he did not find the metabolic rate was of any value. In nearly all cases of Graves's disease the respiratory quotient was lowered; it might be 0·71, 0·73, and often it was below 0·75. It rose coincidently with the improvement in the case. When the respiratory quotient was very low he viewed the case gravely and considered it was not operable for the time being. The total metabolism, as measured in calories, went up markedly in Graves's disease, but not in diabetes proper. The fasting blood-sugar was most important; in diabetes this was raised, but in Graves's disease its level was not altered; it was always normal. This seemed to depend on the glycogen stores of the body.

Dr. **Reginald Hilton** pointed out how difficult it was to avoid errors in these investigations. It was necessary to know what was the respiratory quotient, as it bore an inverse relationship to the metabolic rate. The loss of weight occuring in cases in which artificial pneumothorax was induced presented a clinical problem. He was inclined to agree with Dr. Lawrence that computation of the metabolic rate was rarely necessary, and it was better to do without estimations than that they should be poorly done.

Dr. POULTON, in a brief reply, said the discussion showed how varied were the uses to which this estimation was being put in London, and some valuable data were being accumulated He agreed that in the bad cases there was a lowered respiratory quotient.

## CAMBRIDGE MEDICAL WORTHIES.

Sir StClair Thomson, the President, described the social evening of the Royal Society of Medicine on May 3rd as a respite from the serious affairs of the hour. There was a large gathering of Fellows and their guests, and Sir Humphry Rolleston's address on Some Worthies of the Cambridge Medical School was enjoyed all the more because of its irrelevance to the political situation. The selection of individuals for special mention, he said, had been no easy task; the Cambridge medical graduates' club had 600 or 700 members, all of whom were doubtless worthy, and amongst the 80 presidents of the Royal College of Physicians of London since 1518 there had been 37 who held Cambridge degrees Of these John Caius was *certainly one of the greatest benefactors to his* University (which was founded, so he had solemnly contended, 390 years before the birth of Christ) The originator of scientific anatomy and physician to three sovereigns, Caius was responsible for the second *foundation of Gonville College in the interests of* medicine; but it was unfortunate that he consented to become its master, for he was out of sympathy with the militant protestantism of his time His rooms were raided, the "Popish trumpery" therein was thrown out of the *windows, and Caius himself was* expelled from the University. Gonville and Caius College, said Sir Humphry Rolleston, had provided seven of the 18 Regius professors in the University. Amongst these was Francis Glisson, who anticipated modern muscular physiology by a century and whose observations on rickets, which finally appeared in the famous "Tractatus de Rachitide," almost certainly inspired the work of Whistler, published at Leyden. Following him the Cambridge school produced a long series of interesting and distinguished men—William Heberden the elder, the friend and medical attendant of Samuel Johnson, by whom he was described as "the last of the learned physicians"; Robert Glynn, who was born in Cornwall and educated at Eton and who would never charge fees to Etonians or Cornishmen; Sir Busick Harwood, the witty and licentious professor of anatomy who made successful experiments in blood transfusion, offered his guests at dinner the turbot dissected for his students, and sent Sir Isaac Pennington, the Regius professor, a challenge to a duel. It was of Pennington was written:—

> "When *Pennington for female ills indites,*
> Studying alone, not what, but how he writes,
> The ladies, as his graceful form they scan,
> Cry, with ill-omened rapture, Killing man."

The challenge, however, was ignored, and Sir Isaac lived to the age of 72 and *died a bachelor,* which enabled him, Sir Humphry Rolleston said, to make generous benefactions to his College. Pennington's successor was John Haviland. He found the medical school in a precarious state and under threat of abolition. As a remedy he introduced *regular courses* in pathology and the practice of medicine and made examinations a really serious test of what the candidate knew. He wrote little or nothing, "but if," said Sir Humphry Rolleston, "the medical school is his memorial he could hardly wish for a better." *After referring* to Sir Thomas Watson, whose lectures enjoyed wonderfully long life as a text-book, Henry Thompson, described as a most cautious *physician* and said to have once prescribed half a leech, and Henry Hales Bond, who succeeded Haviland as Regius professor and held the office for 21 years, Sir Humphry Rolleston spoke of the renascence of the medical school which occurred during the middle years of last century and was associated especially with the names of Sir George Edward Paget, Sir George Murray Humphry, and Sir Michael Foster. Paget, he said, was the most distinguished Regius professor at Cambridge since Glisson He was a quiet and very able man and was responsible for the institution of the natural sciences tripos and bedside examinations for the M.B.; the D.P.H. was also started in his 20 years' term of office. Humphry was appointed surgeon to Addenbrooke's Hospital at 22, *when he* had never even amputated a finger; he was a great anatomist and an arresting and impressive teacher; he found the medical school insignificant and was largely instrumental in making it what it is. Foster laid the foundations of *Cambridge physiology. After* a brief account of the extraordinary career of Humphry's successor, Alexander Macalister, who qualified in medicine at 17 and was professor of anatomy from 1883 till his death in 1919, Sir Humphry Rolleston concluded his *address by speaking of some* of the less familiar aspects of the life of the late Sir Clifford Allbutt. Amongst his hearers there were many *who had* not known that Sir Clifford Allbutt had intended to devote himself to art and that he was the original for the Dr Lydgate of George Eliot's "Middlemarch," but all of them joined with his successor in remembering respectfully the contributions of this great man to his university and to science.

At the end of the address there was an opportunity for conversation and to look at the interesting exhibits arranged in the library, many of them lent from the Wellcome Museum by courtesy of the curator. The society's practice of holding social evenings again justified itself to the full.

## Parliamentary Intelligence.

The *Midwives and Maternity Homes Bill,* which has already passed through the House of Commons, was read a first time in the House of Lords on April 28th.

*Mercantile Marine.*—In reply to a question by Mr. Beckett, Sir P. Cunliffe-Lister stated that the classification of the causes of death *of persons employed* on British merchant vessels had been referred by the Board of Trade to the Permanent Consultative Committee on *Official Statistics. The Board antici*pate that the report of that Committee *will be ready* shortly.

*Education of Defective Children.*—In reply to a question addressed by Mr. Robert Morrison to the President of the *Board of Education* asking whether, in view of the fact that since the issue of Circular 1310, 169 local authorities had submitted proposals *for* making further provision for defective children, he would state how many of these proposals had been deleted in the revised *programmes.* Lord E. Percy replied that such proposals had been postponed in a few cases but he had not asked any authorities to *delete them* from their programmes.

*Lunacy Law.*—Mr. Pethick-Lawrence asked the Minister of Health *whether his* attention had been called to the *remarks of a* High Court Judge on April 27th in giving judgment on a recent case, in which he pointed out the hardship created by the existing state of the law, and expressed regret at the decision he was thereby compelled to reach; *and whether he con*templated the introduction of legislation to secure that in future a sane man detained in an asylum *should not be effectively* prevented from bringing an action until it was too late to succeed. Mr. Chamberlain replied that he did not at present contemplate fresh legislation but the points were receiving consideration.

## A FAKIR DEMONSTRATION TO DOCTORS.

A demonstration, said to be in the interests of science and for the benefit of the medical profession, was given by Fakir Dr. Tahra Bey a few days ago at the New Scala Theatre. The place was well filled with invited guests; a panel of 40 medical men had seats reserved on the platform, and a few volunteers from the audience joined this jury. An interpreter stated that Tahra Bey had graduated in medicine at Constantinople and that his sole object was to demonstrate to scientists the influence of mind over body. The fakir, who was clad in oriental costume, then gave an exhibition of his power to enter a state in which considerable physical insult can be suffered without pain. After some manipulation of his neck he fell rigid; he was placed on his back, supported only by two blunt scythe blades several feet apart; a block of stone weighing at least 60 lbs., was lifted on to his abdomen and chest, and a heavy sledge hammer was brought down forcibly on the stone by an assistant. The state of so-called cataleptic rigidity thus demonstrated was followed by a period of analgesia during which the fakir, chatting pleasantly in French the while, pierced his cheeks with hat pins, worried his neck with a large knife which passed through a fold of skin, and allowed a surgeon to transfix any part of his flesh with a sharp instrument, the forearm being the site chosen. These operations were practically bloodless. He also lay down on a bed of vertical nails while an assistant stood on his body. There followed a demonstration of thought reading, which was difficult to follow accurately, but which apparently satisfied those members of the audience who personally tested the fakir's powers. Finally, he endured burial for ten minutes in a coffin which was covered with sand, his mouth and nose being lightly plugged with cotton-wool but his hands left free. When he emerged it was stated by an assistant that his pulse rate was 80. At his first appearance, the pulse rate was ascertained to be 118 and the fakir said that it was normally 120.

The explanation given of the means whereby Tahra Bey gained control over his circulatory, nervous and respiratory systems was unintelligible, and the replies to certain pertinent questions were barely coherent. We have received from many sources alternative explanations and suggestions for tests under experimental conditions.

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## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEKS ENDED APRIL 24th AND MAY 1st.

*Notifications.*—The following cases were notified during the week ended April 24th: Small-pox, 130 (last week 213); scarlet fever, 1502; diphtheria, 866; enteric fever, 42; pneumonia, 1301; puerperal fever, 60; cerebro-spinal fever, 10; acute poliomyelitis, 5; encephalitis lethargica, 52; dysentery, 6; ophthalmia neonatorum, 107. There were no cases of cholera, plague or typhus fever notified during the week.

*Deaths.*—In the aggregate of great towns, including London, there was 1 (1) death from enteric fever, none from small-pox, 81 (35) from measles, 6 (1) from scarlet fever 57 (7) from whooping-cough, 38 (13) from diphtheria, 51 (17) from diarrhœa and enteritis under 2 years of age, and 209 (35) from influenza. The figures in parentheses are these for London itself. The notified deaths from influenza for the 105 great towns show a diminution of well nigh 100 on the figures of the previous week. The measles deaths are now below the 100 limit.

No printed return has yet been issued for the week ended May 1st, 1926, but we are able to give the total notifications of infectious disease for London and for England and Wales as a whole. In London there was notified no case of small-pox; scarlet fever, 211; diphtheria, 242; enteric fever, 9; pneumonia, 117; puerperal fever, 5; cerebro-spinal fever, 3; encephalitis lethargica, 4; continued fever, 2; and ophthalmia neonatorum, 5. In England and Wales as a whole cases were notified: small-pox, 146; scarlet fever, 1518; diphtheria, 979; enteric fever, 44; pneumonia, 1198; puerperal fever, 42; cerebro-spinal fever, 9; acute polio-myelitis, 3; acute polio-encephalitis, 2; encephalitis lethargica, 53; continued fever, 2; dysentery, 7; and ophthalmia neonatorum, 93. In the same week 166 deaths occurred in the 105 great towns from influenza, of which 28 were in London.

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# Obituary.

### STEPHEN PAGET, M.A. OXF., F.R.C.S. ENG.

Mr. Stephen Paget died at his residence, "Furzedown", Limpsfield, on May 8th, aged 70. Born in 1855, the fourth son of Sir James Paget, Stephen was educated at Shrewsbury, Christchurch Oxford, and St. Bartholomew's Hospital, whence he qualified M.R.C.S. in 1883, taking the F.R.C.S. two years later. Following his father, he became Surgeon to the West London and Metropolitan Hospitals before developing the specialty which led to his appointment as Surgeon to the Throat and Ear Department of the Middlesex Hospital. His name will be remembered chiefly as the founder in 1908 of the Research Defence Society, a reincarnation of the earlier Association for the Advancement of Medicine by Research which his father had helped to inaugurate 25 years earlier. For many years under his inspired leadership as Secretary and later as Vice-Chairman this Society has striven to make generally known the value and necessity of animal experiment. The active prosecution of medical research being debarred to him by ill-health, the protection of other workers from undeserved attack became his chief life work. His publications, which include a memoir of his father and a biography of Sir Victor Horsley, reflect this bias but differ from most propagandist literature in the grace and charm of their style. His essays are delightful and Confessio Medici, first published in 1908, has become a classic cherished by medical men and reread perhaps more often than any other book on their shelves. Stephen Paget lived to see the need for experimental work accepted by nearly all his colleagues and by a large section of the thinking public.

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## V.D. CLINICS AND THE L.C.C.

*To the Editor of* THE LANCET.

SIR,—With regard to my letter on this subject in your issue of April 3rd (p. 735), the chairman of the Public Health Committee of the London County Council has asked me to write and explain that it is not the intention of the County Council to concentrate entirely on six whole-time clinics, and that those clinics which are to be closed will receive one year's intimation of the fact.

I am, Sir, yours faithfully,

STELLA CHURCHILL.

*Chiswick, W., April 29th, 1926.*

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# Vacant Appointments.

**Elizabeth Garrett Anderson Hospital,** Euston-road.—Wanted, fully qualified Medical Women for the following posts: HOUSE PHYSICIAN, OBSTETRIC ASSISTANT, and HOUSE SURGEON. Salary at the rate of £50 per annum, with board, residence, and laundry. Appointments from 1st July for six months. Applications, with three copies of testimonials, to be sent to the Secretary before 26th May.

IMOGEN H. MURPHY, Secretary.

**Applications are invited for the Chair** OF ANATOMY at the Royal Veterinary College, Camden Town, London, N.W. 1, which will be vacant at 1st October next. Salary £600 per annum, plus Superannuation benefits. Applications, accompanied by not more than four testimonials, should be addressed to the Secretary, and received not later than 1st July.

# Medical News.

## THE STRIKE IN LONDON.

University of London.—The Final Examinations, normally held in June, for Internal and External Students, have been postponed to a date not earlier than Sept. 1st. The first day of the recent final M.B., B.S. examination coincided with the first day of the stoppage of transport. In spite of this only four or five candidates—some two per cent. of the entry—failed to present themselves punctually for papers and practical tests. Common difficulties of transport appeared to lead to more fraternisation between examiners and candidates than is usual on these formal occasions. and lifts in private vehicles labelled "M.B., B.S. Examination Hall" were exchanged.

British Medical Association.—The Association inform us that they asked for suggestions from the Ministry of Health and the Home Office as to any way in which the Association could be helpful during the emergency. They were informed that there was no central way in which the organisation could be used, but that doctors could serve best by placing themselves at the disposal of the police authorities in their own neighbourhoods.

London School of Medicine for Women.—At this School work was carried on as usual. Several of the students and members of the staff volunteered for public service and such occupations as might usefully free men for work as special constables, etc., but it was not found necessary to call on them.

The emergency duties assumed by medical students in London were manifold and varied. Students were feeding horses, staffing restaurant-cars and driving food lorries. One squad of students were taught the technique of train signalling in 48 hours, and were sent to Exeter to carry on this work. Others did duty as porters, while a large number were serving as full time special constables. One of the latter is in St. Thomas's Hospital with a punctured wound of the back.

The Metropolitan Borough of St. Pancras collected the names of doctors available in case of serious civil commotion.

37 young consultants from the Harley-street area enrolled in the Metropolitan Special Constabulary Reserve, Marylebone, D. Division.

The almoners at one of the big London hospitals had so little to do in the absence of large attendances of out-patients, that they used the opportunity to prepare the year's accounts and statistics.

## THE STRIKE IN PROVINCIAL CENTRES.

We have received from correspondents the following information on the effects of the industrial disturbance. *Newcastle-on-Tyne.*—At the Royal Victoria Infirmary cases of accident or injury were few, the electrical supply was maintained by volunteers, and the chief anxiety was financial; the workers' weekly contributions are an important source of income. Lectures at the medical school were suspended as all the students were on public service. Vegetables and some medical necessaries became somewhat scarce. *Cardiff.*—Work at the Infirmary and the medical school proceeded on normal lines. *Liverpool.*—The hospitals were little affected. There was a shortage of coal, but fresh meat was obtainable in spite of slaughtermen leaving work. *Leeds.*—No emergency medical services were needed. The General Infirmary's activities were unhampered; medical students, with few exceptions, continued their studies; there was no restriction in food, and the sanitary conditions of the city remained satisfactory. *Sheffield.*—The hospitals did not suffer in service or supplies, but it was estimated that the industrial dispute would inflict on them a loss of £1500 a week under the 1d. in the £ scheme. Food supplies were maintained. The university continued its work, but many students undertook civic duties. *Bristol.*—The emergency hardly affected the hospitals. Although a large proportion of the medical students volunteered for service only a few of the final year students were called away. There has been practically no evidence of distress amongst the families of those involved in the conflict. *Nottingham.*—There was no interference with hospital or private practice. Straitened conditions of livelihood have as yet produced no perceptible effects. *Aberdeen.*—General conditions remained fairly normal. There were no special difficulties in carrying on medical work. Many students went on public service. *Glasgow.*—The work of general, Poor-law, and other hospitals proceeded smoothly. The cars of doctors were occasionally held up but were always allowed to proceed. No difficulty arose in connection with sanitation and the food supply was adequate. *Manchester.*—There was no dislocation of medical services or the provision of necessaries.

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# Medical Diary.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, May 19th.—5 p.m., History of Medicine. Annual General Meeting. Election of Officers and Council for 1926–27. Mr. Walter G. Spencer: Celsus de Medicina.

Thursday,—5 p.m., Dermatology. (Cases at 4 p.m.) Annual General Meeting. Election of Officers and Council for 1926–27. Cases, Dr. Semon: Case for Diagnosis. Dr. Kingston: Premycotic stage of mycosis fungoides. Dr. Barber: Reticulated pigmented poikilodermia (Civatte).

Thursday, May 20th.—8.15 p.m., Electro Therapeutics and Rontgen Society. Dr. A. Dauvillier (Paris): The Measurement of X-ray Dosage. (Mackenzie Davidson Memorial Lecture).

Friday—5.30 p.m., Electro-Therapeutics. Annual General Meeting. Election of Officers and Council. Dr. H. Eaton Stewart (New Haven, U.S.A.) Diathermy in Pneumonia.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY AND RESEARCH.

Thursday, May 20th.—Lecture postponed.

MANCHESTER ROYAL INFIRMARY POST GRADUATE COURSE.

Tuesday, May 18th.—4.15 p.m., Mr. F. H. Westmacott: Deafness, Curable and Incurable.

Friday, 4.15 p.m., Dr. J. Cowan: *Demonstration* in Electro-therapeutics.

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# Deaths.

Crisp.—On May 4th, at Market Harborough, John Crisp, M.R.C.S. Eng., L.R.C.P. Lond., aged 62.

Heaton.—On May 3rd, at Cape Town, *Lieut.-Colonel* Arthur Frederick Heaton, R.A.M.C. (retd.)

Paget.—On Saturday May 8th, at Furzedown. Limpsfield, Stephen Paget, F.R.C.S., aged 70.

**TERMS OF SUBSCRIPTION, POST FREE. Payable in Advance.**

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# An Address

ON THE

# MEDICAL ASPECTS OF TOBACCO.

*Given before the Harrogate Medical Society on April 10th, 1926,*

BY SIR HUMPHRY ROLLESTON, BART.,
K.C.B., M.D. CAMB., F.R.C.P.,
REGIUS PROFESSOR OF PHYSIC, UNIVERSITY OF CAMBRIDGE.

THE medical aspects of tobacco interest us all in our capacity as medical advisers of others, and, in addition, probably a certain proportion from a personal point of view. As in the case of alcohol, our opinions are inevitably coloured by our own tastes, for the teachings of the laboratory cannot always be rigidly applied to human practice or correspond with the empirical lessons of a lifetime. Animal experiments cannot well take into account idiosyncrasies, and with regard to alcohol and tobacco personal peculiarities are so important that they must often over-rule any hard-and fast laws.

## HISTORY.

Tobacco-smoking is very ancient, and its history shrouded in the obscure clouds of its own smoke, for it has existed in South America (Orinoco) and the West Indies from very early times; and in China old undated monuments bear engravings of pipes. In North America there is a tradition that during a time of dire famine a heaven-sent maiden descended among the Hurons and wrought a miracle by causing Indian corn, potato, and tobacco to spring up. In 1492 Christopher Columbus not only discovered America but the island of Tobago and the chiefs of Cuba in the act of puffing rolls of tobacco leaves, a primitive form of cigar called "tobago." The Spaniards learnt smoking in America about 1560, and it was first introduced into England by Sir John Hawkins in 1565 or by Sir Francis Drake and Sir Walter Raleigh in 1585. Jean Nicot (1530–1600), the French Ambassador to Sebastian, King of Portugal, sent some tobacco seeds which he obtained from a Flemish merchant at Bordeaux, to Catherine de Medici in 1559, and thus led to its use in France and to the immortalising of his own name in those of the plant, *Nicotiana tabacum*, and of nicotine—one of the many instances of man getting more credit than is his due. Dr. C. Singer, however, points out that André Thevet, in his "Singularitez de la France antarctique autrement nommé Amerique" (Paris, 1558), stated that he brought the seeds of the tobacco plant to France and started growing it there in 1556, or three years before Nicot. About this date Cardinal de Sainte Croix, Papal Nuncio to Portugal, and Nicolo Tornaboni, Nuncio to France, first introduced tobacco into Italy as a cure for the morbus gallicus (syphilis) and called it the "herbe sainte." The name tobacco has also been derived from the language of the island of St. Domingo. "Tobacconist" originally meant one who smokes and not the seller of the commodity. The word "cigar" probably comes from the Spanish "cigarrar" (to roll) and the spelling "segar" occurs in Twiss's "Travels through Spain" (1783) and is not unfamiliar now.

The use of tobacco since its introduction into this country from America by Sir Walter Raleigh in 1585 has, like other innovations, good or bad whichever it may seem to you, excited opposition as well as welcome. Henry Buttes, "Master of Artes and Fellowe of C.C.C. in C.," in his "Dyets Dry Dinner Consisting of eight severall Courses" (1599), made tobacco the last course and said that "it cureth any grief dolour, opilation (obstruction), impostume, or obstruction proceeding of cold or winde." King James I., in his famous counterblast (1604), vigorously condemned it; Raphael Thorius, a Fellow of the Royal College of Physicians and a devotee of tobacco, wrote "Hymnus Tabaci sive de Pacto" (1627), and with Matthew Gwinne, also a Fellow of the College and a poet, had the hardihood to argue in favour of the weed in a medical disputation held at Oxford for the edification of James I. in 1605. William Barclay, Mr. of Art and Doctor of Physicke, in "Nepenthes or The Vertues of Tobacco (Edinburgh, 1614), recommended it for many diseases, dropsy, arthritis, gout, epilepsy, and as an "antidotte of hypochondricall melancholie"; he must have been rather an optimist, for he continues: "It prepareth the stomache for meat; it maketh a clear voice; it maketh a sweet breath," and after further extolling its medicinal powers, "in few words it is the princesse of physical plants." In 1615 the Vice-Chancellor of Cambridge found it necessary, as, indeed, he probably would even in these more enlightened days, to proclaim that "no graduate, scholler, or student presume to take tobacco into St. Mary's Church, upon payne of finally expellinge the University," and Charles II. forbad Cambridge men "to wear periwigs, smoke tobacco or read their sermons." In "A brief and accurate Treatise concerning the taking of the Fume of Tobacco which very many in these dayes doe too too (sic) licenciously use" by Tobias Venner, Doctor of Physicke in Bathe (London, 1637), it is written "Indians call it petun or petum, which indeed is also the fittest name that both we and other nations may call it by, deriving it of peto, for it is farre fetcht and much desired. And thus much for the name." He adds that "it is hot and drie in the third degree, and hath a deleterialle, or venemous qualitie, as I suppose: for it being any way taken into the body, it tortureth and disturbeth the same with violent ejections both upwards and downwards, astonishes the spirits, stupifieth and benummeth the senses and all the members. To conclude, therefore, I wish them that desire to have mentem sanam in corpore sano, altogether to abandon infanum praeposterumque Tabacci usum." In 1624 Pope Urban VIII. published a decree of excommunication against snuff-takers and Innocent XII. extended this to smokers in 1690. In the interval (1634) smoking had been prohibited in Russia on pain of having the nose cut off. Strange as it may appear, Oliver Cromwell and the Puritans smoked tobacco, though the Society of Friends and the Salvation Army banned this form of indulgence. As recently as the early 'fifties in the last century tobacco was at a very low ebb in this country; snuff was going out of fashion, and the increasing practice of smoking was regarded by society as a low, vulgar habit suitable, indeed, for labourers, Bohemians, and the scum of society, thus re-echoing King James' "surely smoke becomes a kitchen far better than a dining chamber." In 1857 there was much discussion in THE LANCET on "The Great Tobacco Question: Is Smoking Injurious to Health?" In the previous year Samuel Solly, F.R.S., surgeon to St. Thomas's Hospital, asserted that it was one of the causes of general paralysis, and in the correspondence that later raged he quoted three cases of delirium tremens in non-alcoholics in the hospital due to smoking, and stated that it caused spermatorrhœa, a condition then attracting undue attention. A more modern and very keen anti-tobacconist, H. H. Tidswell, who regretted that he acquired the habit in the medical school of St. George's Hospital, considers that "it may truly be described as suicide or self-destruction by early instalments," and regards it "as a form of narcophilia which may soon develop into narcomania dulling the intellect and poisoning their wives by their smoky breath, thereby causing sterility," thus recalling the lines in the well known "Ode to Tobacco,"* which appeared in C. S. Calverley's "Fly-Leaves."

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* It is interesting to note that according to Mrs. L. Creighton (Life and Letters of Thomas Hodgkin, 1917, pp. 19, 148) this ode was really written in 1840 by Hodgkin's two Quaker sisters aged 16 and 17 for an essay society at Tottenham and was unsigned. Misled by the close resemblance to his style, a friend of Calverley's caused them to be published as his in "Temple Bar" in about 18[illegible]. Calverley died in 1884. For a collection of amusing verses reference may be made to Walter Hamilton's "Poems and Parodies in Praise of Tobacco," 1889.

"How they who use fusees
All grow by slow degrees
Brainless as chimpanzees,
Meagre as lizards.
Go bad and beat their wives,
Plunge (after shocking lives)
Razors and carving knives
Into their gizzards."

At the present time there is a vigorous anti-tobacco crusade in the United States of America, where, in 1913, it was calculated that the yearly consumption was 5·59 lb. per head of the population, as against 2 lb. in this country. There is thus, as in other ways, a parallelism of the views held about alcohol and tobacco, but it is at least doubtful if prohibition in America will embrace weeds as well as wine.

Pipe-smoking is, of course, a very ancient way of using, or, as it was once expressed, drinking, tobacco, as the finds in prehistoric graves testify. Makeshift pipes of very various kinds, such as the rather grim utilisation of the thigh bone of a child or the more commonplace knuckle bone of a lamb, are described in "The Pipe Book," by Alfred Dunhill; the earliest written accounts of a tobacco pipe are those in Gonzalo Fernandez de Oviedo y Valdes' (1478–1557) "Natural Hystoria de las Indias" (1526) and Jacques Cartier's narrative of the exploration of the St. Lawrence estuary (1536); the first refers to a Y-shaped tube the two prongs of which were apparently held in the nostrils, thus confirming the view that smoking was evolved from inhalation, and describes as a very bad vice that of the Indians in taking the smoke, which they call tabaco, in order to lose consciousness; Cartier describes the Indians using "a hollow piece of stone or wood like a pipe—i.e., like the musical instrument which that name denotes." Some of the prehistoric pipes were straight and more like the modern cigar- or cigarette-holder than the now familiar pipe.

Cigars of scents were smoked in India in the seventh century A.D., but the rolling up of tobacco leaves appears to have been initiated later, though it was in existence when America was discovered; Thevet in his "*Cosmographie Universelle*" (1575) gives an illustration of Indians smoking cigars shaped like cornucopias. Cigar-smoking was popularised in this country by officers who learnt it in Spain during the Peninsular War (1808–14), and cigarettes were similarly brought from the East as a result of the Crimean War (1854–56), but did not become really common until 30 years later. The first well-known man in society to smoke cigarettes was Laurence Oliphant (1829–88), the brilliant mystic and author who brought the habit from Russia. The influence of war is shown by the much greater frequency of women smokers during and since the Great War, and as perhaps an aftermath the recent action of some railway companies in relaxing the regulation against smoking in waiting-rooms and labelling some carriages "non-smoking."

Tobaccos vary considerably in their nicotine content; Cavendish tobacco contains 4·15, Latakia 2·35, and mild honeydew 1·6 per cent. According to THE LANCET's analysis, pipe mixtures have the highest nicotine content, and British cigars a higher than Havana. The nicotine content of the tobacco and of its smoke, however, do not vary directly, the way in which the tobacco is smoked and the degree of combustion being the important factors; thus Virginia cigarette tobacco contains (1·4 per cent.) nearly twice as much nicotine as Manila cigar tobacco, and yet the cigar smoke contains more than double the amount of nicotine in the cigarette smoke (Dixon); the smoke of Virginian cigarette tobacco contains 0·06 per cent. only of its nicotine content when smoked as a cigarette, but when burnt in a pipe 37 to 53 per cent. of its nicotine content. The degree of combustion is most complete in cigarettes of all kinds, least in a pipe, and midway in the case of cigars. In pipes as much as 70 to 80 per cent. of the nicotine in the tobacco may pass into the smoke; a good deal, however, turns on the length of the mouth-piece; a long pipe is, therefore, better than a short one; thus a clay pipe or a churchwarden allows the nicotine to condense in the stem to such an extent that very little passes into the smoke. As the nicotine collects in the moist area of the cigar behind the burning tip, and may, if it does not undergo complete combustion, be carried into the mouth by the hot smoke, a thick or moist green cigar is more harmful than a thin or a dry one, and the bitter end should be abandoned and a half-smoked cigar not re-lit. It has been stated that a smoker who re-lights a pipe or cigar absorbs more poison than he would from ten ordinary smokes (Kionka). According to Dixon the smoke of one cigar contains as much nicotine as 12 to 18 cigarettes.

### COMPARATIVE EFFECTS OF PIPES, CIGARS, AND CIGARETTES.

The general opinion is that cigarette-smoking is the form likely to give the worst results, then cigars, and lastly, pipes. On the other hand, the order has been reversed; the evil reputation of cigarettes has been ascribed by Turney, who speaks of them as "the smokers' L.S.A.," to their patronage by the unstable neurotics who are unable to stand cigars and pipes. Two reasons given for the more evil influence of cigarette-smoking are: (1) that many more cigarettes than pipes are smoked, and (2) that cigarette smoke is inhaled, whereby *nicotine and carbon monoxide* are more certainly introduced into the body, and furfurol exerts its irritating effect on the mucous membrane of the nasopharynx, and produces a smoker's throat and cough. According to Armstrong, cigarette smoke contains up to 1 per cent. carbon monoxide, but more when smoking is rapid than slow; a Havana cigar smoked quickly giving as much as 8 per cent., or the same as in South Metropolitan gas. The blood of cigarette smokers may show CO absorption even up to 5 per cent. (Dixon). On the other hand, cigarette smoke is diluted more freely with air than pipe smoke, 80 as compared with 50 per cent., and a heavy cigarette-smoker commonly consumes less tobacco than a pipe- or cigar-smoker; often he is like a patient with a tic and throws the cigarette away when half smoked, so that the larger the number of cigarettes used the smaller is the amount of each smoked. The content of nicotine in cigarette smoke is much less than that in the smoke of pipes, that of cigar smoke being between these two extremes. The effects of cigarette-smoking appears to be chiefly due to carbon monoxide (Dixon), pyridine, furfurol, and ammonia, whereas cigar smoke is powerful mainly on account of its nicotine content. There appears to be some divergence of opinion as to the influence of the cigarette paper; some say that it is harmless, others, as Kionka, that the paper collects the products of distillation, which are volatilised and absorbed. Virginian cigarette smoke contains furfurol, and THE LANCET analysis states that one cigarette will provide as much as two ounces of whisky, while Turkish cigarettes supply very little, and cigars and pipe tobacco none. Furfurol, pyridine derivatives, ammonia, and carbon monoxide are distillation products from vegetable material and are not, like nicotine, in any way special to tobacco, but by their irritating effects on the mucous membrane of the throat and upper air passages may in some way account for the evil reputation of cigarettes. Cigar-smoking usually gives a much greater feeling of satiety than cigarettes or even pipes. Much, no doubt, depends on the condition—moist or dry—of the weed, and whether or not it is smoked to the bitter end; the state of the pipe, clean or foul, and the length of the stem also bear on the effects produced. Cartridges or plugs, as in Sir Morell Mackenzie's and other hygienic pipes, which seem to have gone out of fashion, to absorb the products of combustion, may diminish the bad effects. The other methods of "using tobacco," an old East country expression now, like others, not only naturalised but surviving in America—namely, chewing and snuffing—are said to be attended by so little absorption of nicotine as to be comparatively free from untoward symptoms.

*Tolerance* to smoking tobacco is usually acquired within a short time, and according to Dixon and Lee is due to slow destruction of nicotine by a ferment, and so long as destruction keeps pace with absorption toxic symptoms are avoided. But idiosyncrasy to the effects of tobacco is not uncommon and may be quite active and prevent acquisition of tolerance or only render the individual indifferent. Though tolerance may be lifelong, it often diminishes with advancing years, especially, I fancy, with the presence of arterio-sclerosis; hence, old people give up the habit as the result of experiencing unpleasant symptoms, such as giddiness, cardiac irregularity, or pain. Idiosyncrasy shows itself in the curious way in which some persons can smoke a considerable amount of tobacco in the form of cigarettes, but none in a pipe or as a cigar. Tolerance may be modified or even abolished by disease; for example, influenza. Sometimes a confirmed smoker may, without being conscious of a change in the quantity or quality of the tobacco smoked, be knocked over, as if he were a novice. Kionka considers that the tolerance is of a limited character, and that when a seasoned smoker oversteps the mark he suffers more than the novice because his tissues are saturated with nicotine. The first sign of failing tolerance is a vague distaste for tobacco, which may lead to frequent trials of new brands or mixtures. It has often seemed to me that the average man has, roughly speaking, a certain capacity for smoking, and that if he is a very heavy smoker for some years, his smoking life, so to speak, is thereby curtailed. There are, of course, many exceptions, but that such a rough relation exists between consumption of tobacco and the duration of tolerance seems not improbable in the light of carbohydrate and protein metabolism, in which excessive sugary or meaty diets may in time lead to diabetes or gout.

### IS TOBACCO-SMOKING AN ADDICTION?

Tobacco-smoking becomes a habit and, no doubt, there is a considerable psychological element in the act, for a man may be quite happy, at any rate for a time, with an empty or unlit pipe in his mouth, and I have known a porcelain cigarette, resembling in appearance a chocolate one, console a constant smoker. An extreme example of the influence of the cigarette habit was a man I met *non-professionally* during the war, who told me that he smoked 100 cigarettes in the day, which, supposing each cigarette had ten minutes' life, would provide more than 16 hours' occupation daily; he had given it up with the result that his work was so interfered with that he returned to his cigarettes. The way in which cigarette abstinence interrupted his work was not, as I supposed, by making him feel restless, but by stopping his writing by his becoming conscious that his left hand was automatically fumbling on the table in front of him where the cigarette box stood in normal times. Is tobacco-smoking an addiction? Opinion on this point may differ. Prof. W. E. Dixon, who says that the inveterate cigar-smoker must continually be absorbing a small quantity of nicotine to keep his nervous system in a comfortable state, and that the constant cigarette consumer feels the need of carbon monoxide, denies that smoking is an addiction. This question turns on the meaning attached to the work "addiction," and may therefore be a verbal problem. The Ministry of Health's Departmental Committee on Morphine and Heroin Addiction (1926) defined an addict as "a person who, not requiring the continued use of a drug for the relief of the symptoms of organic disease, has acquired, as a result of repeated administration, an overpowering desire for its continuance, and in whom withdrawal of the drug leads to definite symptoms of mental or physical distress or disorder." That smoking produces a craving for more when an attempt is made to give it up, as Charles Lamb has so graphically described in "The Confessions of a Drunkard," is undoubted, but it can seldom be accurately described as overpowering, and the effects of its withdrawal, though there may be definite restlessness and instability, cannot be compared with the physical distress caused by withdrawal in morphine addicts. To regard tobacco as a drug of addiction may be all very well in a humorous sense, but it is hardly accurate.

### THERAPEUTIC USES OF TOBACCO-SMOKING.

During the Plague of London smoking was regarded as a sure protection against the disease, and women and children and boys at Eton had lessons in this prophylactic measure; even now some smokers proclaim that smoking immunises them against influenzal infection; it is true that in vitro tobacco smoke has a bactericidal effect which persists after filtration through cotton-wool, and so, as nicotine is thus removed, is due to other bodies, such as pyrrhol and formaldehyde. But in the mouths of smokers Puntoni found that tobacco smoke has very slight bactericidal powers even for micro-organisms with very little resistance to antiseptics. In the past tobacco as an enema was employed to relax muscular spasm so as to allow a dislocation to be reduced, and with rather less reason—i.e., its antiseptic properties—as an external application for many other conditions, such as wounds and ulcers, erysipelas, the itch, syphilis, and cancerous growths; and to relieve pain in rheumatism and after operations. Infusion of tobacco has occasionally been used as an abortifacient, and in Germany young women are stated to seek employment in tobacco factories with this object in view. The spasm of bronchial asthma may be reduced by smoking, but only when it is carried to a nauseating degree. Tobacco has dropped out of the British Pharmacopœia, but it certainly has its uses, especially as a sedative, as every smoker knows; it may act as a charm for the fidgets. I remember a lady in a small Scots village who only got relief from the post-prandial fidgets by smoking one of her husband's pipes, and was hard put to it to conceal this method from her servants when they came into the room unexpectedly.

### BAD EFFECTS OF TOBACCO-SMOKING.

Just as many more therapeutic uses than are now recognised have been ascribed to the use of tobacco, so, as has already been mentioned, have numerous evil effects been referred to its abuse. Now, as tobacco smoke contains nicotine, carbon monoxide, and pyridine bases, and as it undoubtedly has a familiarly striking effect on raw youths, it must be acknowledged that it, maybe, has evil effects. Some of them will be mentioned, but considering the universality of the habit and the large number of heavy smokers, the comparative rarity of undoubted lesions due to smoking is remarkable. In this respect there is a great contrast between the price paid by those who smoke and those who drink alcohol to excess. It has sometimes been argued that these methods of meeting the need for narcotics go hand in hand and that smoking leads to alcoholic indulgence, but probably few smokers would admit this indictment, and, indeed, the contrary may well be argued—namely, that as a sedative and narcotic the popularity of the tobacco habit has ousted alcoholism. But there can be little doubt that the injurious effects of excessive smoking are materially augmented by, if not in part due to, simultaneous alcoholism.

#### *Nervous System.*

Nicotine exerts, as Langley showed, a definite action on the nerve cells in the path of the autonomic nerve-fibres, first exciting and then paralysing them. It is therefore to be expected that smoking will, in virtue of the nicotine and the carbon monoxide contained in the smoke, affect the nervous
and a large number of manifestations occur in
posed persons. Binet, from a review of experi
observations, concludes that tobacco exerts a
effect on the brain. Muscular tremor, similar t
of Graves's disease or senility, can in some indi

be produced with the regularity of a laboratory experiment, and, as in the case of vertigo, have been ascribed to chronic poisoning by carbon monoxide; in others jumpiness and irritability, or neuralgia, vertigo, insomnia, or headache are produced. Mendenhall's physiological investigation of the effect of smoking, which points to the sensory and motor effects being mainly due to the contained nicotine, shows that the immediate results are conditional on the state of the sensory mechanism; when this is depressed the immediate effect of smoking is stimulation, and when the sensory mechanism is hyper-excitable smoking exerts a depressing effect. But the depressing effect on the sensory threshold is much more prominent than the stimulating influence. Motor reactions are disturbed in the direction of diminution of efficiency, especially of the finely coördinated movements. Turney describes transient motor paralysis consequent on slight over-exertion or pressure on nerves, and also accepts transient aphasia due to tobacco, but these must be very exceptional.

An important question is the influence of smoking on the higher intellectual centres; after a transient preliminary stimulating effect on mental processes, during the act of smoking, its sedative effect develops. It is rather alarming to find that in America 2000 psychological tests on medical students showed that smoking lowers mental efficiency in from 10 to 23 per cent., and especially in imagery, perception, and association. Adolphe Abrahams, while recognising that these tests may not be conclusive, believes that smoking diminishes the general capacity for work, impairs memory for names, and renders sleep less refreshing; and Turney, who admits to being a moderate smoker, considers that some of the indolence, dreamy apathy, and premature senility often seen in heavy smokers is due to their indulgence. He also refers to migraine and epileptic fits being increased by smoking and disappearing when the habit is abandoned. That psychoses are definitely due to excessive smoking is probably rarely, if ever, true; more often the constant smoking is a manifestation of the neuropathic constitution. But it would be difficult to deny that abuse of tobacco may not do harm to a neuropathic person, and so be a contributory factor.

### *Tobacco Amblyopia.*

Tobacco amblyopia, with a central scotoma more marked for colours than for white light, is regarded by Gowers as probably due to a primary degeneration of the macular fibres with a secondary retrobulbar neuritis. According to de Schweinitz, moderate smokers of 60 or over, who have not altered the quality or quantity of their tobacco, may, after a long period of immunity, suffer from the characteristic papillo-macular scotoma. While recognising the influence of the so-called cumulative effect of tobacco as a possible explanation, he regards this as unsatisfactory, and believes that sclerosis of the small nutrient arteries of the retina and optic nerves is a contributory factor. It is said that tobacco amblyopia is almost entirely due to excessive pipe-smoking, and that a foul condition of the pipe is an important, if not essential, factor; according to Weidler, though amblyopia is specially associated with the use of shag. it is but rarely solely due to smoking, alcoholism being an accessory, thus illustrating the action of two poisons combining to exert a powerful influence. Complete abstinence from both poisons and full doses of nux vomica should lead to a cure, but relapse of the amblyopia may follow if the excessive use of the poisons is resumed. It is said that in tobacco amblyopia the dilatation of the pupil resulting normally on stimulation of the skin of any part of the body is either in abeyance or obtained only by increased stimulation (Dorrell).

Deafness is ascribed to smoking and is probably due to extension of pharyngeal catarrh to the middle ear, but it has also been referred to toxic effects on the internal ear. The tinnitus of otosclerosis is increased even by very moderate smoking. It is an interesting question whether the vertigo is due to the toxic effects, including vascular disturbance, on the semicircular canals, thus being analogous to tobacco amblyopia, or whether it is central.

### *Effects on the Heart.*

On the heart the unpleasant effects of smoking may be divided into: (1) The "tobacco heart" of young smokers, characterised by palpitation, rapid action, and frequent extrasystoles. (2) Arrhythmia at any time of life and more noticeable after 50 years, when extrasystoles are common and more easily induced. The late Sir Clifford Allbutt wrote: "One case is known to us of a man whose general health is excellent, who is by no means a neurotic subject, and whose heart stands work well in all other respects, in whom intermittence of the heart may occur for many days if he remain for an hour or two in a room with many smokers. He dare not sit in a close smoking-room or in the smoking compartment of a railway carriage. The intermittence may not begin until the next day, or the next but one, but then comes on with the certainty of a laboratory experiment; it gets worse during the next day or two, and then gradually passes off in a few more days. He never suffers from any cardiac disorder unless exposed to tobacco, but this proclivity has hung about him for many years. He has no dislike to the drug, nor does he feel any immediate discomfort from it." I have no doubt that he was here describing his own symptoms, and often thought of this when he hospitably handed cigarettes to his guests ignorant of his idiosyncrasy. For the possible comfort of smokers with extrasystoles it may be mentioned that coffee also causes extrasystoles, and that the effect of abstinence from coffee and, perhaps, tea may be worth a trial before definitely deciding on "no tobacco." (3) Angina and anginoid pain due to smoking are more often seen in the later half of life. Manifestations of the more severe form of angina are said to be rare. I have seen it in two doctors fond of cigars and have heard of others. It may be noted that nicotine, unlike adrenalin, constricts the coronary in addition to other arteries, thus offering a reasonable explanation of angina. Sir Clifford Allbutt, who was rather critical of the subject, especially of Huchard's hypothesis of spasm of the coronary arteries, had seen only three well-marked cases, and obviously considered that cases of true angina had been thus described; no doubt there is a merciful tendency to take this view if possible, and it may be comforting to quote Mauriquand and Bouchat's definite dictum that angina solely due to tobacco is never fatal, but the obvious difficulty is to be certain that a given case is entirely due to tobacco. The late Sir Richard Douglas Powell and others have classed the tobacco cases as vasomotor or false angina. Minor degrees of anginoid pains, such as substernal oppression and tightness on exertion such as to stop the patient in going uphill, are not uncommon. Attacks of syncope sometimes appear to be due to smoking. The pulse of smokers is usually somewhat faster than it is, or would be, when they have given up the habit, and the average pulse-rate in smokers is some ten beats a minute faster than in non-smokers.

A point of some interest is the effect of smoking on physical efficiency. The prejudice against smoking by athletes while training is very old, and, though it is open to discussion, seems still to be on the whole generally approved. From a statistical inquiry into 304 male students at the Antioch College, Yellow Springs, Ohio, Earp found that the non-smokers were more successful both in scholarship and athletics than the smokers. From inquiry from athletes I gather that the most successful are non-smokers, and that some, but not all, are convinced from their own experience that smoking handicaps them. Adolphe Abrahams, however, from very considerable experience of athletes is not convinced that tobacco alone makes more than the most trivial difference to an athlete who trains well in other respects. An old Cambridge Blue for the quarter-mile told me that he gave it up on one occasion for a few weeks without any improvement in his time, and that Sir Clifford Allbutt told him that in his experience it took six weeks to get the nicotine out of the system. The question might arise whether or not the popular belief that smoking impairs the wind is explicable as the effect of nicotine or, as might seem more probable, of carbon monoxide combining with the hæmoglobin and so paralysing some of the red blood corpuscles

### *Blood Pressure.*

Tobacco-smoking raises the systolic blood pressure from 5 to 20 mm Hg, the diastolic pressure being less influenced; at the same time the rate of the heart is increased by about ten beats per minute The rise of systolic blood pressure is transient, and after half an hour falls to normal or below. In moderate and habitual smokers who have acquired tolerance the fall of blood pressure is gradual and the soothing effect of tobacco probably compensates for the changes, indeed, apart from any other factors confirmed smokers tend to have a low blood pressure; this has been insisted on by Dr de Havilland Hall, and according to the late Sir Lauder Brunton a systolic blood pressure of 100 mm Hg in a strong healthy man without any evidence of tuberculosis spelt excessive smoking in 19 out of 20 cases. In young people without acquired tolerance to tobacco, Prof Dixon's curves show that the initial rise of systolic blood pressure is suddenly followed by a fall which may be so considerable as to cause the familiar symptoms of collapse, which may last for an hour or more Although it is rarely seen in ordinary practice, there appears to be some evidence that tobacco-smoking produces sufficiently severe spasm of healthy blood vessels to cause definite symptoms; Erb, who described intermittent limp in 1898, ascribed it to excessive smoking, and Schlesinger and Turney confirm this view Parkes Weber considers that excessive cigarette-smoking is a causal factor in thrombo-angeitis obliterans among young non syphilitic Jews in the East End of London. Spasm appears to be induced more often and, perhaps, more readily in arterio-sclerotic than in healthy vessels, and possibly tobacco smoke may, in virtue of its nicotine content, be responsible for anginoid and cardiac pain and for angina abdominis.

Experimentally, nicotine produces definite arterial degeneration in rabbits; Huchard and others have erected the bogy of tabagism, and it has been thought that tobacco specially damages the abdominal arteries. The late Sir Clifford Allbutt, a non-smoker, reviewed the question of the causal relation to arterio-sclerosis in his open minded manner in 1915, and came to the comforting conclusion that if tobacco-smoking is a cause at all of arterio-sclerosis, it is a very slow one, at any rate to most persons, so that its effects being mingled with other conditions of senility are almost impossible of discrimination, and ten years later, in his last message, he did not find any later evidence to weaken his opinion that the effect of tobacco in causing hyperpiesis or senile atheroma, if any, is negligible

### *Alimentary Canal.*

The responsibility of irritation exerted on the lip by the hot stem of a clay pipe in causing squamous-celled carcinoma is now mainly of historic interest, as clay pipes have largely gone out of use The sore tongue and the white patches of leukoplakia on the tongue of smokers are well known, among Fournier's 321 cases of leukoplakia, 80 per cent were syphilitics, but other estimates are lower, down to 50 per cent. Among 40 cases analysed by Fox two women only were non-smokers, and 35 were habitual smokers, but syphilis appears to be an underlying cause, and is probably responsible for the great majority of the cases that go on to carcinoma.

The effect on the stomach is important; X ray bismuth meals have shown that after a short period of increased contractility the motility of the stomach becomes paralysed for an hour or so (Danielopolu); as the subjective feeling of hunger very probably depends on contractions, the relief of hunger by smoking may be thus explained; it is said that dilatation of the stomach may thus result According to Linkint the potassium sulphocyanide in smokers' saliva inhibits protein digestion, and nicotine diminishes the secretion of pepsin and rennin. Hyperchlorhydria due to pyloric spasm may be induced by excessive cigar-smoking or by pipe-smoking excessive for the individual, and thus difficulty in diagnosis from peptic ulcer may arise, perhaps more often in men about 50 In the presence of oral sepsis excessive secretion of saliva may lead to gastritis. In the rather rare tobacco dyspepsia there is from inhibition of the sympathetic exaggerated vagal action and pyloric spasm, thus imitating duodenal ulcer, tobacco dyspepsia being pressor thus differs from the other toxic dyspepsias which are depressor in character (Ryle) The comparative infrequency of tobacco dyspepsia may serve as an excuse for quoting the parody—

> "To smoke or not to smoke, that is the question,
> Whether a mild cigar assists digestion,
> Or whether it begets a kind of quaintness."

The stimulating effect of nicotine and pyridine compounds on the intestine may in intolerant young people cause rapid diarrhœa, and in seasoned individuals serve a useful purpose in promoting defecation. On the other hand, spastic constipation may result, and even enterospasm of various parts of the colon, with persistent abdominal pain most resistant to treatment other than abstinence from tobacco.

*On the respiratory tract*, tobacco-smoking is responsible for pharyngeal catarrh which may spread to the larynx and bronchial tubes, causing cough, hoarseness, bronchial catarrh, and so emphysema of the lungs. The irritating effect on the throat and upper air passages exerted by cigarette smoking has been ascribed to furfurol, pyridine, and ammonia, and not to nicotine

### REFERENCES.

1 Abrahams, A. The Times, Oct. 21st, 1925
2 Allbutt, C Diseases of the Arteries including Angina Pectoris, 1915, i., 250, London.
3 Idem Arteriosclerosis, A Summary View, 1925, p 20, London.
4. Armstrong, H E.: Brit. Med. Jour, 1922, i., 992
5 Binet, L. Presse Méd., Paris, 1925, xxxiii., 131
6 Brunton, T. L. Trans. Med. Soc. London, 1912, xxxv., 313.
7 Danielopolu, D: Compt. rend. Soc. Biol., Paris, 1925, xcii., 535
8 de Schweinitz, G E.: Trans. Coll. Phys., Phila, third series, 1924, xlvi., 375
9 Dixon, W E. Brit. Med. Jour, 1921, ii., 810
10 Dixon W E., and Lee, W. E. Quart Jour Exper Physiol., London 1912, v., 373
11. Dorrell, A. E. Brit. Med Jour., 1913 i., 1109
12. Powell R. Douglas System of Medicine (Allbutt and Rolleston), 1909, vi., 161
13. Earp, J R.: The Lancet, 1925 i., 213
14 Fournier Trans. Thirteenth Internat. Congress Med., 1900, ix., 496
15 Fox, H Jour Amer Med. Assoc., Chicago, 1925, lxxxv., 1523
16 Gowers, W R. System of Medicine (Allbutt and Rolleston), 1910, vii., 352
17 Hall, F de Havilland Trans. Med. Soc. London, 1912, xxxv., 302
18 Huchard Maladies du Cœur, 1890, ii., 159
19 Kionka, H Ergebnisse der gesamten Medizin, Berlin, 1925, vii.
20 The Lancet, Reports of Analyses from The Lancet Laboratory, 1912, i., 944, 1012, ii., 54
21 Mauriquand et Bouchat: Arch. des Mal. du Cœur, &c., Paris, 1912, v., 657.
22 Mendenhall, W L. Amer Jour Physiol., Baltimore, 1925, lxxii., 549
23. Puntoni, V Ann. d'igiene, Roma, 1920, xxx., [illegible]
24 Ryle, J A.: Gastric Function in Health and Disease 1926, pp 104, 112.
25 Singer, C. Quart. Rev., London, 1913, [illegible]
26. Solly, S. The Lancet, 1856 ii., 641; [illegible] 170
27 Turney, H G: Trans. Life Assurance [illegible] London, 1913 p 151
28. Idem: Med. Mag., London, [illegible]
29 Venner, T A brief and [illegible] pp. 313–361 in his [illegible]
30 Weber F P The Lancet, [illegible]
31 Weidler, W B. [illegible]

# An Address

ON THE

# TREATMENT OF CHOLECYSTITIS

AND THE

# PREVENTION OF GALL-STONES.

*Delivered before the Cardiff Medical Society on Feb. 17th, 1926,*

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GALL-STONES are almost always secondary to cholecystitis, though very often the latter has completely died out long before the former give rise to sufficiently definite symptoms to warrant operation. A deposit of mucus, disintegrated epithelial cells, and bacteria forms a suitable basis upon which cholesterol can be deposited if it is present in excess in the blood or the flow of bile is impeded. Consequently the early recognition and successful treatment of cholecystitis, together with the prevention of hypercholesterolæmia and biliary stasis, should prevent the formation of gall-stones.

Gall-stones have long been known to be extremely common; they are found post mortem in at least 10 per cent. of all people dying after the age of 20. Probably over 20,000 people now living in the City of Cardiff have gall-stones or will have them before they die. But it has only recently been recognised that cholecystitis is also very common—in both sexes and at all ages, except in children. It must, in fact, be much more common than gall-stones, as the latter are always preceded by cholecystitis, though cholecystitis is only followed by gall-stones in a small minority of cases. My own experience in the last five years has indeed convinced me that cholecystitis is the most common of all chronic abdominal disorders—considerably more common than chronic appendicitis.

## DIAGNOSIS.

A diagnosis of cholecystitis can be suspected from a study of the history and symptoms if the details are skilfully elicited. It can generally be confirmed by physical examination. Laboratory and other accessory methods are of value in settling the diagnosis in doubtful cases, in determining the nature of the infection, and giving other information, which may be of great practical importance in settling the details of treatment.

### (a) *Symptoms.*

The onset of symptoms is generally gradual and often dates in women from pregnancy; sometimes successive pregnancies have been followed by a recurrence or aggravation of symptoms. What Moynihan described several years ago as the "inaugural symptoms" of gall-stones are now recognised to be the symptoms of the preceding cholecystitis, and are quite independent of the presence of stones. They can be summarised under the popular designation of flatulent dyspepsia. The patient complains of an uncomfortable sensation of fullness in the epigastrium after meals, which he believes to be due to wind, but as his interpretation of his sensations is erroneous, his efforts to relieve himself by belching are futile and only result in aerophagy. The discomfort generally comes immediately after meals; when, however, it is associated with reflex hyperchlorhydria, it simulates the hunger pain of duodenal ulcer, beginning two or more hours after a meal and being then relieved by taking more food, by alkalis, and by vomiting, though in each case less completely and less rapidly than with duodenal ulcer. Vomiting is not uncommon, especially in women; it is generally preceded by nausea and often occurs in the absence of any pain, which is quite unlike the much less common vomiting in gastric and duodenal ulcer. Nausea is very frequently present; it may be the only symptom, cholecystitis being the most common cause of chronic nausea.

The symptoms rarely disappear completely, and do not show the periodical recurrence so characteristic of duodenal ulcer. But acute or subacute exacerbations are quite common. When these are severe there may be a slight rise of temperature for a few days, sometimes accompanied by slight leucocytosis. Occasionally the chronic constipation generally present is replaced by sudden diarrhœa during these attacks.

Although the dyspeptic symptoms are generally epigastric, the patient often complains of an aching sensation in the region of the gall-bladder and less frequently in the back, especially near the angle of the right scapula.

Acute attacks of pain, whether in the epigastrium or further to the right, coming suddenly at any time, but especially in the early night, and disappearing rapidly after persisting from a few minutes to several hours, are generally due to the presence of gall-stones, but they may also occur in uncomplicated cholecystitis. The occurrence of jaundice, however slight, in attacks of this kind strongly points to gall-stones.

### (b) *Physical Examination.*

The four quadrants of the abdomen should be successively palpated. The patient should be asked no questions, but his face should be watched. If cholecystitis is present no change in expression will be observed until the right upper quadrant is reached. The hand is placed flat on the abdomen with the fingers pointing upwards below the left costal margin whilst the patient takes a deep breath; however deeply the fingers press no resistance is encountered, and it is obvious from the patient's face that no discomfort is felt. The manœuvre is now repeated on the right side: it is at once recognised that the rectus muscle does not "give" to the same extent; the patient may look uncomfortable, and when told to take a deep breath the inspiration is suddenly arrested and an expression of acute discomfort is seen. Palpation is next carried out on the right side in three segments; it is found that pain is only produced during deep inspiration with the middle one, or sometimes the middle one and to a much less extent the inner one, but not at all with the outer one. This is conclusive evidence that cholecystitis is present; it is due to the tender gall-bladder being brought into intimate contact with the fingers when the liver descends. I have repeatedly demonstrated this sign to a class of students, even when the history obtained by the clinical clerk had not led me to suspect the presence of cholecystitis and the patient had never suffered from any pain or discomfort on the right side; subsequent investigations have almost always confirmed the diagnosis.

The increased tenderness is often accompanied by referred tenderness over the eleventh rib, at the angle of the scapula, and to the immediate right of the spinal processes of the eighth to the eleventh dorsal vertebræ, and, as Ryle has demonstrated, over the third to the tenth spinal processes.

### (c) *Accessory Methods of Diagnosis.*

(1) *Examination of Bile and Duodenal Contents.*—Meltzer's discovery in 1917 that the introduction of magnesium sulphate into the duodenum leads to the contraction of the gall-bladder and relaxation of the sphincter of the common bile-duct suggested to Lyon that specimens of human bile might be obtained for investigation by this means. We have now used it in over 250 cases, and have come to the conclusion that it yields very valuable information; in the majority of cases the pathological investigations were carried out by Dr. F. A. Knott. We have very rarely failed to introduce the tube into the duodenum, and the proceeding is no more unpleasant for the patient than a fractional test-meal. The sterilised Einhorn tube is swallowed up to the 23-in. mark first thing in the morning before the patient has had anything to

eat or drink. The stomach is emptied and then washed out with sterile water, the last washing is kept for bacteriological examination in order to exclude the possibility of contamination. The tube is then slowly paid out up to the 28½ in. mark, which allows sufficient length for the duodenum to be reached Samples are aspirated every quarter of an hour until the comparatively abundant, acid, turbid, and colourless fluid present in the stomach is replaced by the very small quantity of neutral or alkaline, clear and bile-stained fluid present in the duodenum. The pylorus is generally passed in less than half an hour, and more than an hour is rarely required The first duodenal specimen is kept for examination, the duodenum is then washed out with sterile water, and from 2 to 4 drachms of magnesium sulphate in 25 per cent. solution are injected through the tube. An abundant flow of pure bile rapidly ensues. This is aspirated and the tube is withdrawn.

In the absence of gall bladder disease the bile and duodenal contents very rarely contain any pus cells, and still less frequently cholesterol crystals, but often a few columnar epithelial cells and a little mucus. If squamous epithelial cells are found the specimen is rejected, as their presence indicates contamination with swallowed spittle. Unless achlorhydria is present the duodenal contents are generally sterile or contain a few staphylococci, most of which are dead. A few colonies may grow very sluggishly and probably represent the survivors of the swallowed bacteria which have not been killed by the gastric juice. The *M catarrhalis* was never found, being apparently always destroyed in the stomach. In patients with achlorhydria, whether they have gall bladder disease or not, numerous bacteria are found in the duodenum, especially *B coli*, which appears under these conditions to ascend very frequently from the colon to the duodenum, but streptococci are rarely discovered unless the patient is suffering from Addison s anæmia or subacute combined degeneration of the cord

In gall bladder infections the bile and duodenal contents often contain pus cells, together with a larger number of columnar epithelial cells and more mucus than is generally found in normal individuals. Cholesterol crystals are frequently found in the bile of patients with gall-stones, but rarely in uncomplicated cholecystitis, and in not a single one of 70 consecutive cases in which there was no sign of cholecystitis or gall stones. In cholecystitis the bile contains bacteria, generally of a single variety, the most common infecting organism being a coliform bacillus. Streptococci have only been found in exceptional cases, and not at all in the first 100 consecutive observations carried out by Knott and Venables.

A coliform bacillus was isolated in only 7 per cent of 300 specimens of saliva examined by Glynn and Digby (125) and Knott (175), and as in no case of gall bladder infection examined by Knott was a coliform bacillus found in the spittle, it is clear that its discovery in the bile is very rarely, if ever, due to accidental contamination with swallowed saliva.

The type of coliform bacillus isolated from the bile was accurately determined by Knott in 36 cases; in 16 of these in which cholecystitis was present a pathogenic coliform bacillus was found 15 times (*B coli communis*, 12, *B typhosus*, 2; *B lactis aerogenes*, 1) and a non pathogenic coliform bacillus only once (*B acidi lactici*) whereas in 20 specimens obtained from patients who had no gall bladder disease only 6 were pathogenic, the remainder being of various non pathogenic types. The bacteria in the latter group were probably due to contamination of the gall bladder bile with the duodenal contents, as in 15 there was a low gastric acidity or actual achlorhydria which favours infection of the duodenum, both ascending from the bowel and descending from the mouth.

Whenever the gall bladder has subsequently been removed at operation, the same kind of cells and the same bacteria have been found by Knott in its contents as were discovered in the bile obtained through the duodenal tube

The following is one of our two cases in which *B typhosus* was isolated from the bile obtained through a duodenal tube; in the other the patient had suffered from periostitis of the tibia since a febrile illness, presumably typhoid fever, which he had contracted in Gallipoli ten years before.

*Typhoid Cholecystitis and Cholelithiasis, in which B typhosus was discovered in the Bile obtained by Duodenal Intubation 23 years after Typhoid Fever* —A lady, aged 40, was admitted to New Lodge Clinic in March 1925, on account of abdominal symptoms, which dated from an attack of typhoid fever in 1902, and which had become so severe during the last few years that her life was miserable and she had had to give up all her social activities. Gastroptosis, movable kidney, and appendicitis had been suggested as possible causes of her symptoms, which consisted in almost constant pain in the epigastrium and right side of the abdomen and back, often associated with severe headache and sometimes culminating in severe attacks with nausea and vomiting. She had become much weaker and so nervous that the condition had been regarded as possibly a pure neurosis for which psychotherapy was tried without benefit

*On admission* nothing abnormal was found on abdominal examination beyond some tenderness in the region of the gall bladder The duodenal contents were very slightly bile-stained contained no leucocytes or epithelial cells, and were sterile The contents of the gall bladder, obtained after injecting magnesium sulphate, were found by Dr Knott to consist of dark bile with a heavy deposit of mucus, containing a few columnar cells and cholesterol crystals with granules of bile pigment, but no leucocytes. Cultures gave a pure growth of a typical *B typhosus* which gave a positive Widal reaction in a dilution of 1 in 100

X rays showed the presence of a shadow in the right hypochondrium, which was clearly a gall-stone, and which corresponded exactly with the most tender point in the abdomen. The cæcum was situated in the pelvis, and on rectal examination the visualised appendix was found to be acutely tender Inflation of the colon produced pain in the right iliac fossa and epigastrium (Bastedo's sign) The X rays showed no abnormality in the stomach; a fractional test-meal gave a normal curve, and no occult blood was found in the stools.

Three stools had been examined without discovering typhoid bacilli but in view of their presence in the bile a further search was made in plate cultures prepared from an incubated emulsion of fæces; a few colonies of typical *B typhosus* were now discovered, which were agglutinated by standard sera.

The gall bladder and appendix were removed by Mr Dodds Parker The former contained three moderately large black stones, consisting almost entirely of pigment. The mucous membrane was eroded and the walls showed chronic inflammatory changes Cultures from the bile, interior of the stones, and submucous tissue all gave typical *B typhosus* together with a smaller number of *B coli* The appendix showed fibrosis but no sign of recent inflammation, and cultures of its contents gave *B coli* and enterococci only

A strongly hæmolytic staphylococcus was isolated in the bile of a patient who was sent to us for severe anæmia, and recovery followed medical treatment of the cholecystitis.

*Severe non Addisonian Anæmia caused by Infection of the Gall bladder with a Hæmolytic Staphylococcus Recovery under Medical Treatment* —Mrs. H. aged 41, came into New Lodge Clinic for symptoms of exhaustion in April 1925 In 1916 she had had attacks of pain in the right hypochrondrium, accompanied by alternating diarrhœa and constipation with passage of mucus and bright red blood. Colitis was diagnosed in 1917 and her condition improved with treatment, but ever since 1916 she had been unfit and depressed and had felt abnormally tired. Though there had been no recurrence of severe pain she still suffered from epigastric discomfort after meals. In August 1924, she had an acute attack of giddiness, and had since been unable to leave the house except in a bath-chair Even indoors she could do very little on account of fatigue.

On investigation she was found to be anæmic. The hæmoglobin percentage was 47 and the red corpuscles numbered 1,020 000 per c.mm. giving the low colour-index of 0 58 this together with the very slight degree of anisocytosis and poikilocytosis and absence of megalocytes and nucleated cells excluded Addison's anæmia. The white corpuscles were normal in number and gave a normal differential count

A fractional test meal showed complete achlorhydria even after preliminary lavage; an ordinary test meal had shown that free hydrochloric acid was absent already in 1917 It is unusual to find achlorhydria in any form of anæmia other than Addisonian but the absence of any yellow coloration of the skin, enlargement of the spleen, or sign of Hunterian glossitis, together with the blood picture, seemed definitely to exclude Addison's anæmia.

The gall-bladder bile obtained through a duodenal tube after injecting magnesium sulphate contained leucocytes, but no crystals, and on cultivation a pure growth of a hæmolytic *Staphylococcus aureus* was obtained. Although no red corpuscles were seen the bile contained hæmoglobin, due presumably to the breaking down of red corpuscles, present with the leucocytes in the inflammatory exudate from the gall-bladder mucous membrane, by the staphylococcal hæmolysin. This discovery was so unusual that the investigation was repeated; on the second occasion exactly the same results were obtained. There was no doubt that the staphylococci came from the gall-bladder, as the duodenal contents obtained before injecting magnesium sulphate were sterile, which is very uncommon in patients with achlorhydria.

Nothing abnormal was found on X ray examination of the alimentary tract. The stools were normal and there was now no evidence of colitis. No other signs of disease were found.

It seemed reasonable to associate the infection of the gall-bladder with a hæmolytic staphylococcus with the development of the anæmia. As pain in the right hypochondrium was present as long ago as 1915, the cholecystitis was probably responsible for the whole of the prolonged illness.

Treatment with large doses of urotropine, an autogenous staphylococcal vaccine and non-surgical biliary drainage with magnesium sulphate for the cholecystitis, together with hydrochloric acid for the achlorhydria, resulted in rapid improvement. The hæmoglobin percentage rose to 60 in a fortnight. Although it had not risen above 66 when the patient was seen again in September, 1925, yet she was looking well and feeling better than she had done since the beginning of her illness ten years before, and she was now able to lead a life of normal activity. By February, 1926, the hæmoglobin percentage had reached 75.

Knott and Venables have shown that when gall-stones are present the evidence of active inflammation tends to disappear from the gall-bladder contents; leucocytes are generally absent and the bile is often sterile, but cholesterol crystals, which are very rarely found in uncomplicated cases of cholecystitis, are often present.

(2) *Biochemical Investigations.*—Van den Bergh's test is sometimes of use in showing the presence of slight excess of bile in the blood, which is insufficient to give rise to obvious jaundice and is below the renal leakage point, so that none appears in the urine. This is occasionally observed in cholecystitis, but it generally points to the presence of a small stone in the common bile-duct.

It is always worth while giving a fractional test-meal, as the result gives a valuable indication for treatment. In 30 per cent. of cases achlorhydria is present; this is secondary to severe gastritis or is the result of constitutional achylia gastrica. The loss of the antiseptic acid barrier of the gastric juice results in the invasion of the duodenum with coliform bacilli from the lower parts of the intestine in addition to bacteria of various types, but only rarely coliform bacilli, from the mouth and nasopharynx. This may be followed by ascending infection of the bile-passage from the duodenum. In a smaller proportion of cases (15 per cent.), and especially in those which simulate duodenal ulcer, hyperchlorhydria is present; this is probably a reflex result of the cholecystitis.

The recent investigations of Campbell at Guy's Hospital have failed to confirm the opinion expressed by Chauffard and various other authors that the presence of excess of cholesterol in the blood is evidence in favour of the presence of gall-stones. This has, of course, no bearing on the fact that the hypercholesterolæmia caused by the excessive activity of the corpus luteum in pregnancy plays an important part in the production of gall-stones in women who have had children.

(3) *X Rays: Cholecystography.*—In 1924 E. A. Graham, Cole, and Copper, of St. Louis, discovered that by the administration of certain substances, which are opaque to the X rays and are excreted in the bile, the gall-bladder could be visualised. We have already had sufficient experience to be able to confirm Graham's opinion of the great clinical value of cholecystography, and we now regard the method as one which should be employed in the investigation of all cases of possible gall-bladder disease.

Eleven different but analogous substances have so far been found which are capable of giving cholecystograms; the most satisfactory of these is sodium tetra-iodo-phenolphthalein. As the hydrochloric acid of the gastric juice precipitates the soluble sodium salt in an insoluble acid form, which irritates the stomach and intestines without being absorbed and may give rise to vomiting and diarrhœa, it should be given in 5 gr. pills coated with stearic acid or capsules treated with formaldehyde, which pass unaltered through the stomach and are dissolved in the small intestine. The sodium salt set free is absorbed into the portal circulation and is excreted in the bile. It thus reaches the gall-bladder, the mucous membrane of which absorbs water from the bile, and so leads to its gradual concentration until, about 12 hours after the pills are swallowed, a clear shadow of the gall-bladder can generally be seen with the X rays.

A dose of 5 gr. of the sodium salt is given per 10 lb. of body-weight in stout patients and 5 gr. to each 12 to 15 lb. of body-weight in thin patients, with a maximum of 100 gr. The pills or capsules are taken one at a time at intervals of a few minutes in the course of a meal at 6.30 P.M. The patient then fasts until the following morning, but he is encouraged to drink water every half hour till 9 P.M. During the whole of this period he lies on his right side. At 9 A.M. the following morning the patient, still fasting, is X rayed. He is then given a meal containing plenty of fat, such as scrambled eggs, bread and butter, and milk with cream, as fat causes the gall-bladder to contract. Two hours later he is again X rayed to see whether the gall-bladder shadow has become smaller or disappeared.

Pain in the epigastrium and, less frequently, nausea, vomiting and diarrhœa may occur, but the symptoms are never severe and do not last long. If vomiting occurs, or if the shadows of the pills are seen like lead pellets in the colon owing to their non-absorption, the test should be repeated.

We also repeat the test if no shadow is seen in spite of the apparent absorption of the drug. We prefer this to the intravenous administration of the drug, as in several cases we have observed alarming collapse follow the injection. It may be hoped, however, that before long some less toxic but equally opaque substance will be found which can be given intravenously without fear of the consequences.

When the gall-bladder is rendered visible after the administration of sodium tetra-iodo-phenolphthalein the abdomen should be palpated under the screen. By this means it is possible to determine whether any tender point under the right costal margin which has previously been discovered actually corresponds with the gall-bladder. The confirmation of gall-bladder tenderness by cholecystography is of great value, just as the analogous discovery of tenderness confined to the appendix, which has been visualised after an opaque meal, is valuable confirmatory evidence of chronic appendicitis in cases of tenderness in the right iliac fossa. In chronic appendicitis it is often possible to demonstrate that the junction of the appendix with the cæcum or some other part of it is alone tender, and in some cases of gall-bladder disease we have found that the only point of tenderness is situated over the neck. Slight pain produced by pressure exerted from the fundus towards the neck, but in no other direction, is probably due simply to increased tension in the gall-bladder and does not signify that any disease is present.

Failure to visualise the gall-bladder after the drug appears to have been completely absorbed, especially if this is confirmed at a second examination, is strong evidence in favour of obstruction of the cystic duct or of the presence of stones which completely fill the gall-bladder, unless such severe disease of the liver is present that the drug is not excreted. If the shadow is very irregular in outline, the gall-bladder is probably deformed by adhesions or fibrosis. Gall-stones can sometimes be recognised as less opaque areas on the dark background formed by the shadow of the concentrated solution of the salt in the bile, but slight mottling of the shadow does not appear to have any significance

If the shadow does not disappear or become much smaller two hours after taking a fatty meal, it can be assumed that the activity of the muscular wall of the gall-bladder is impaired owing to chronic inflammation, so that its reflex evacuation does not occur in a normal manner

The X rays sometimes give direct evidence of the presence of gall-stones. Formerly it was often difficult to decide with certainty whether a shadow seen in the right hypochrondrium was thrown by a gall-stone, a renal calculus, or a calcified tuberculous gland. Now, however, with the aid of cholecystography the relation of the shadow to the gall-bladder can be accurately determined.

If difficulty is experienced in deciding between the diagnosis of gall-bladder disease and duodenal ulcer, or it appears possible that both conditions are present together, an opaque meal should be given when the gall-bladder is being examined by Graham's method It can then be ascertained whether any tenderness which is present is localised to the gall-bladder or duodenal bulb alone or whether both are tender. By deep palpation the existence of adhesions between the gall-bladder and duodenum or stomach can be recognised, and in all cases of gastric and duodenal ulcer a constant and characteristic deformity is found.

### TREATMENT OF CHOLECYSTITIS.

Cholecystitis is due to infection of the gall-bladder; it is aggravated by biliary stasis. Consequently the treatment consists in dealing with the infection by biliary antiseptics, autogenous vaccination, and the removal of septic foci, and by the provision of adequate biliary drainage.

#### (a) *Biliary Antiseptics.*

My colleague, Dr. Knott, has confirmed the old observations of Crowe that urotropine is excreted in the bile as well as in the urine. He has shown that, although it is completely inactive in alkaline urine and serum, its antiseptic powers are unaffected by the alkalinity of bile. When used as a urinary antiseptic the urine must be kept acid in order that formalin may be set free. But unfortunately formalin irritates the bladder and leads to frequency of micturition and even hæmorrhagic cystitis. This makes it impossible to give much more than 10 or 15 gr. of urotropine three times a day for urinary infections. If, however, the urine is kept alkaline, very large doses can be given without causing any unpleasant symptoms. When it is used as a biliary antiseptic, alkalis should therefore be administered at the same time; this does not interfere with its antiseptic action on the bile, but it prevents irritation of the bladder. As the attainment of a maximal concentration of urotropine in the bile is desirable in order to disinfect the biliary tract and especially the gall-bladder, we give the patient two mixtures to be taken together after breakfast, after tea, and at 10 P.M., a glass of milk being drunk immediately after the last dose in order to prevent gastric irritation; the first mixture consists of a drachm each of sodium bicarbonate and potassium citrate in an ounce of water, and the second of 100 gr. of urotropine in an ounce of water. The first day an ounce of the alkaline mixture is taken with half an ounce of the urotropine mixture; the dose of the latter is increased by a drachm each day until a full ounce is taken If any irritation of the bladder is produced the dose of urotropine, but not of the alkaline mixture, is slightly reduced, but as a rule the patient can take the full 100 gr. of urotropine three times a day without difficulty We have only had a single case in which temporary hæmaturia occurred and the use of the drug had to be discontinued The double mixture is taken regularly for several months; occasionally the administration of the urotropine has to be interrupted for a few days, after which the dose is gradually raised again from 50 to 100 gr.

Urotropine is excreted in the cerebro-spinal fluid and has been shown to prevent the experimental infection of the central nervous system in animals. Its use clinically has in the past been limited owing to the smallness of the dose which could be safely given. During the last year we have used the method of administration I have just described for cases of encephalitis lethargica, and it might also be tried in the acute stage of poliomyelitis and other infections of the central nervous system. We have found that the enormous dose of 300 gr. a day is well borne, even by children, but it is too early to say whether the treatment succeeds in overcoming the infection.

Salicylates are also excreted in the bile and have been recommended for biliary infections. Knott's observations show, however, that it is very doubtful whether they ever exert a definite antiseptic action on the bile.

As the infecting organisms are invariably present in the bile in typhoid and paratyphoid fever, urotropine should always be given through the whole course of these diseases. The only disadvantage of giving very large doses would be that the simultaneous administration of alkalis would prevent it from exerting an antiseptic action on the urinary passages, though it is less important to secure urinary than biliary disinfection in these conditions.

If achlorhydria is present between 1 and 2 drachms of dilute hydrochloric acid should be taken in 5 to 10 oz. of water, to which the juice and pulp of an orange and some sugar are added. The first dose is taken half an hour after the magnesium sulphate to which I shall presently refer, and half an hour before breakfast; the second and third doses are taken as the daily beverage at lunch and dinner. By this means the antiseptic acid barrier of the stomach is to some extent restored.

#### (b) *Vaccination.*

When in a case of cholecystitis a specimen of bile obtained through a duodenal tube contains a pathogenic organism, a vaccine should be prepared from it and a course of inoculation carried out for several months.

#### (c) *Focal Infection.*

Although Knott's investigations showing the prominent rôle played by coliform bacilli compared with streptococci in the pathogenesis of cholecystitis throw considerable doubt on the supposed importance of focal infection in this disease, any pyorrhœa, apical dental infection, or infection of the throat, nose, or nasal sinuses should be thoroughly treated. This is especially important if achlorhydria is present, in order to reduce the danger of further infection ascending the bile passages from the duodenum, which is continually reinfected by swallowed organisms if the antiseptic acid barrier of the stomach is lost.

#### (d) *Biliary Drainage.*

Lyon and others have stated that non-surgical biliary drainage can only be procured by the direct introduction of magnesium sulphate into the duodenum through an Einhorn tube. My colleague, Dr. J. F. Venables, has, however, proved conclusively that magnesium sulphate acts just as efficiently if given in concentrated solution by mouth when fasting an hour before breakfast. Non-surgical biliary drainage is thus a method of treatment which can be easily and conveniently practised. The patient should find for himself what is the largest dose of the salt he can take without causing diarrhœa; he should avoid paraffin or other aperient and take his concentrated solution of magnesium sulphate every morning as soon as he wakes. If his bowels act regularly without aperients he will not be able to take more than half to one drachm, but if he is habitually constipated he will require 2 to 4 drachms, but he must understand that the salt is given primarily for biliary drainage and not as an aperient.

Biliary drainage can also be promoted by exercise, because the liver, as it descends in deep inspiration, is squeezed between the diaphragm and the abdominal muscles, if their tone is sufficient to offer an adequate resistance. Patients who lead a sedentary life and especially the obese should be instructed to take plenty of active outdoor exercise, and in many cases deep breathing exercises morning and evening are very useful.

If the abdominal muscles are weak an efficient support should be provided in addition to giving abdominal exercises. There is no doubt that the erect posture leads to kinking of the biliary ducts in patients with weak abdominal muscles, especially if the right kidney drops excessively or the liver twists downwards to the right on an antero-posterior axis.

### THE PREVENTION OF GALL-STONES.

The recognition and treatment of cholecystitis is the best prophylaxis of gall-stones. It is possible to go even further by trying to keep down the hypercholesterolæmia in normal pregnancy by prohibiting eggs and cream, which contain a great deal of cholesterol. It is curious that these are just the things that pregnant women are usually advised to take. These slight dietetic restrictions are clearly worth while if they serve to reduce the high incidence of gall-stones in women who have had children.

As it is impossible to tell when a gall-stone is beginning to form, it is wise, as Chauffard and his pupils have shown, to give all patients with active cholecystitis a diet poor in cholesterol. In addition to cream and the yolk of eggs, brain, liver, sweetbread, kidneys, and roe should be avoided, and all forms of animal fat should be taken in strict moderation. As many of the patients are obese this diet has the further advantage of helping them to lose weight. If, however, the patient is thin, olive oil should be given before meals, especially if hyperchlorhydria is present, as it inhibits the flow of gastric juice. It was formerly recommended in the wild hope that it would reach the gall-bladder and dissolve stones in situ, as it was found to do in a test-tube; the calcium oleate concretions found in the stools were mistaken for stones which had been expelled, but why they had fallen out of solution again was not explained. It is clear now that the patients who benefited from the olive oil treatment were those whose dyspeptic symptoms were associated with reflex hyperchlorhydria. The presence of olive oil in the duodenum also has the effect of causing the gall-bladder to contract and so promote biliary drainage, though it does this less effectively than magnesium sulphate.

Is it too rash to hope that in the next ten years the general practitioner will be able to pick out his cases of cholecystitis from the crowds of his dyspeptics with such certainty, and will treat them so efficiently, that operations on the gall-bladder will become rare events, and the morbid anatomists will regard gall-stones, like pancreatic calculi, as pathological curiosities?

*Bibliography.*

Berkeley Moynihan: Brit. Med. Jour., 1913, i., 8.
A. Chauffard: La Lithiase Biliare, 2nd ed., Paris, 1922.
A. F. Hurst: Med. Essays and Addresses, London, 1924.
F. A. Knott, J. F. Venables, H. Bowell, W. E. Tanner, T. G. D. Bonar, and W. H. Ogilvie: Papers in Guy's Hosp. Rep., lxxii., 1922; lxxiii., 1923; lxxiv., 1924; and lxxv., 1925.
E. A. Graham and others: Jour. Amer. Med. Assoc., 1924, lxxxii., 613 and 1777; 1925, lxxxv., 953.

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DONATIONS AND BEQUESTS.—Miss Esther Barnes, of Fulshaw House, Wilmslow, Cheshire, bequeathed over £45,000 to charities, including bequests for the benefit of ex-soldiers and sailors, religious causes, missionary work; and £500 each to the Manchester Royal Infirmary, Dispensary, and Lunatic Asylum, the Ancoats Hospital, and Ardwick and Ancoats Dispensary, and the Manchester Children's Hospital, Pendlebury.—Mrs. Ann Green, of Huyton, Lancs, bequeathed £1000 each to the Middlesex Hospital and St. Bartholomew's Hospital.—Mr. John William Hunter, of Burton-on-Trent, devised his estate, valued at £8624, to his wife for life, and then to Margaret Skipp for her life, with remainder to Guy's Hospital in London, stating: "I desire to acknowledge my appreciation of the skill of the surgeons and the kindness of the nurses and staff generally which I received at the time an operation was performed on me at the hospital when I was a boy of about of age."

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# COMMON DIFFICULTIES IN LABOUR MET WITH IN GENERAL PRACTICE.*

BY HENRY RUSSELL ANDREWS, M.D., B.S., F.R.C.P. LOND.,
SENIOR OBSTETRIC PHYSICIAN TO THE LONDON HOSPITAL.

WHETHER as general practitioners or as obstetric members of hospital staffs, we all have one object in view—viz., diminishing the difficulties and dangers of childbirth. "Obstetrics" is the art of standing by in case you are wanted, and is one of the most important branches of preventive medicine. If it could be carried out in an ideal manner the number of abortions would be greatly reduced, the number of dead-born infants and of deaths during the first few days after delivery would be enormously reduced, the deaths of women in labour and the puerperium would be reduced to a fraction of the present rate, and the numerous disabilities that handicap women as a result of childbearing would almost disappear. Apart from the mortality from puerperal sepsis, exhaustion, shock, rupture of the uterus, &c., how many women would be saved from misery and disability if prolapse, ruptured perineum, torn cervix, and partial incontinence of urine became rare instead of filling every gynæcological out-patient department! The majority of these troubles are due to difficult labour, most of them are preventable, and it is our business to see that they are, as far as possible, prevented.

### *Prevention of Difficulties.*

The old proverb that "prevention is better than cure" is never more true than in difficult cases of midwifery. The old method was to find out the difficulty only when it was actually present, when mother and child, one or both of them, were in some degree of danger, and when it was too late to avoid the difficulty, the only possible course being to overcome it with all the skill possessed by the accoucheur. Only too often skill was not enough, and a good deal of brute force had to be used, with consequences more or less disastrous, not necessarily because of the inherent difficulties of the case but because they were present in an emergency case. It used to be quite common to hear a doctor talk almost as if he had a grievance against Providence, for having been singled out to be afflicted with the care of a large child with the breech in advance in a fat primigravida, or with an occipito-posterior position persistent to obstinacy, or some degree of contraction of the pelvis in an otherwise well-built woman, not apparent until labour had been in progress for several hours. It is no exaggeration to say that in a great many of these cases the doctor, honestly reviewing the case afterwards, was able to satisfy himself that he was in no way to blame for a dead baby and the more or less severely damaged mother. In the ideal conditions at which we are all aiming, a man who complains that he has had a very difficult labour case will be less likely to get sympathy than to be asked: Why did you allow yourself to have such a difficult case?

One way out of difficulties in labour is to perform Cæsarean section, but it is realised nowadays that Cæsarean section involves a definite mortality rate, besides certain disabilities. The modern way is to *prevent* difficulties so that they do not have to be met as emergencies, and patients are no longer treated, or rather neglected, on the doctrine of probabilities. In many "difficult" cases the difficulty is a real one, and as such should be prevented. In some, however, the difficulty is not real but is imaginary. There are many cases in which difficulty, both real and imaginary, is due to two defects: (1) want of antenatal investigation and (2) want of patience.

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* A paper read before the Balham Medical Society on Feb. 14th, 1926.

### *Antenatal Investigation.*

In most of the serious difficulties of labour the gravity is due to the fact that the cause is found out too late—e.g., malpresentations, excessive size of the child, and contracted pelvis. If the possibility of difficulty is found out early, so that there is plenty of time to make unhurried plans to obviate it, the greater part of the danger is removed at once. Besides routine examination of the urine the essentials of antenatal investigation are: (*a*) measurement of the pelvis, and (*b*) investigation of the lie and presentation of the fœtus.

The external measurements of the pelvis are not nearly so important as the internal measurements—the diagonal conjugate and the rough estimation of the size of the cavity of the pelvis—i.e., whether the pelvis seems to be roomy or not, and the rough estimation of the transverse diameter at the outlet. In extreme cases of pelvic contraction measurements are enough—they give you warning that a living viable child cannot pass through the pelvis. In less degrees of contraction the actual number of inches or centimetres is not the most important thing, but it warns you that a careful estimation of the relative size of the head and the pelvis must be made six weeks before term. Examination at 28 weeks, a time when patients are often told that they must come to their doctor for examination, is of no great value, except that in comparatively rare cases it will confirm your opinion that Cæsarean section offers the only chance of delivery of a living child. In minor degrees of contraction of the pelvis, examination at 34 weeks, and probably again at 36 weeks, will enable you to decide between Cæsarean section, induction of premature labour, and labour at term, with occasionally the possibility of Cæsarean section if the head makes no advance after a reasonable time for moulding. These cases, in which it is felt that if all goes well—i.e., the uterus acts well and a reasonable amount of moulding results—spontaneous delivery will occur, but that if there is no advance in a reasonable time Cæsarean section shall be performed, are often spoken of as "test cases." Everybody's experience is that most "test cases" finish up satisfactorily with little if any interference.

Apart from contraction of the pelvis, a routine examination of all, primigravidæ or multiparæ, should be made at about the thirty-sixth week, even if the pelvic measurements are normal. The presentation must then be ascertained and a malpresentation corrected if possible. In case of a breech presentation external version is often easy a month before term—much easier than at term or after labour has begun. All will agree with me that peace of mind and freedom from anxiety are important assets for a busy man. Most men of ripe experience with large midwifery practices say that they go to every midwifery case with a certain amount of anxiety. If the patient has not been seen before labour has begun it may be found at once that there is very real cause for anxiety. If, on the other hand, you examine all your patients, whether primigravidæ or not, at 36 weeks and again a few days before the expected date of labour, and satisfy yourself that all is well, you will give them a feeling of confidence and security and will reduce your own anxiety to the minimum. You will not care when labour starts, provided that it is not delayed more than a week or ten days after term, and it has no terrors for you, bar antepartum hæmorrhage and sudden eclampsia without warning—a rare occurrence. If the head is found to be well engaged, or deep in the pelvis, at the thirty-sixth week, there is no absolute need for an internal examination, but many men feel safer if they make an internal examination, in case there might be a small ovarian cyst in the pelvis. If there were, the head could not lie very deeply, but one cannot blame a man who likes to make certain and does not trust his abdominal examination implicitly. In a fat primigravida it may sometimes be impossible to say for certain that the head is in the pelvis when it has sunk unusually deeply—the head cannot be found, although everything points to a vertex presentation. Rectal examination is satisfactory in the case of a small ovarian cyst or a very deeply situated head. If you are not satisfied with your examination on account of excess of adipose tissue in the abdominal wall, or hydramnios, or multiple pregnancy, or rigidity of the abdominal muscles, never omit to examine under an anæsthetic and make certain.

### *Timely External Version.*

External version in cases of breech presentation in primigravidæ has been taught for many years, and recently external version in all cases of breech presentation has been advocated, especially by my colleague, Eardley Holland. I think that a good many men have been discouraged by failure because they have not attempted to perform external version until term or even just after the onset of labour. At that stage, especially in a primigravida, external version is often difficult and sometimes impossible, even under anæsthesia, while it is sometimes extraordinarily easy, and probably always possible, a few weeks before term. It is said that about 60 per cent. of all breech presentations undergo spontaneous version into vertex presentations between the thirty-fourth and thirty-sixth weeks, so it is unnecessary to interfere earlier than this. In a difficult case of external version with a breech presentation the trouble is that the breech cannot be displaced from the brim of the pelvis—when once it has been dislodged and pushed even a little to one side the rest of the manœuvre is simple. If the breech cannot be dislodged by abdominal pressure alone, two fingers, four fingers, or even the whole hand should be inserted into the vagina and the breech pushed up from below. The other hand of the operator then pushes the breech to one side while the anæsthetist or the nurse pushes the head to the opposite side. This may sometimes be done successfully even after some of the liquor amnii has escaped. Even if external version, before the onset of labour, has failed, it may be found, on examination some hours later, that the accoucheur's efforts have not been unavailing, and that the good work which he attempted had really been begun and that the movements of the fœtus and the shape of the uterus have succeeded in bringing about a complete version. I have seen this in two of my own cases. Prolonged attempts at external version in my consulting room, without an anæsthetic, had failed, and when I took an anæsthetist to the patient's house the next day I found that there was nothing to be done, the head now lying in the brim of the pelvis with the breech in the fundus. If external version fails before the onset of labour, the most likely reason for failure is that the legs are extended. When labour comes on this must be remembered, the feet sought for as soon as the membranes rupture, and if the legs are found to be extended, a foot brought down, before the breech has descended low enough in the pelvis to make this manœuvre difficult. At the East End Mothers' Lying-in Home last year, among 2179 patients, external version was performed before the onset of labour in 24 cases of breech presentation. All these 24 patients had normal deliveries.

It is important to remember that it is more difficult to diagnose the lie and presentation after labour has begun, especially after rupture of the membranes, and infinitely more difficult to correct abnormal lies and presentations then than in the last few weeks of pregnancy. A man who does not see his patients until they are in labour will get more than his share of difficult labours; he is handicapping himself, and is unjustifiably increasing the risks of mother and child. Public opinion is already beginning to influence men who have so far been inclined to look on antenatal investigations as a new-fangled fad, and it is certain that more and more patients will comment adversely on neglect of antenatal examination, just as some of them do if the urine has not been examined during pregnancy.

*Eclampsia.*—A very instructive result of antenatal supervision has been seen during the last few years. For the Fourth British Congress of Obstetrics and Gynæcology in 1923 a collective investigation was carried out into the results of various methods of treatment of eclampsia. After the meeting of the Congress the committee arranged that certain groups of hospitals should treat cases of eclampsia with various selected methods of treatment, in the hope that comparison of the results would furnish valuable information, but it was found that, although the project was taken up with enthusiasm, only very small numbers of cases of eclampsia presented themselves for treatment, antenatal supervision having made eclampsia a comparatively rare condition. It is such evidence as this that justifies the statement that midwifery is one of the most important branches of preventive medicine.

### *Abdominal Palpation.*

There are still some men practising midwifery who never make an abdominal examination during pregnancy or labour, probably because they, like myself, were taught nothing about abdominal palpation in pregnancy and labour when they were students. However expert they may be at vaginal examination they cannot distinguish between face presentation, breech presentation, and shoulder presentation before labour and early in labour, when the presenting part is high up, at the time when correction of a malpresentation would probably be easy. Consequently, it is by no means rare to find that a case has been treated as one of breech presentation for many hours until the appearance of a hand low down in the vagina forces on the attendant the diagnosis that the case is one of shoulder presentation. In some of these cases the fœtus is gripped by the uterus too firmly for internal version to be safe, and the only method of delivery is by decapitation. Abdominal examination in such a case, if necessary under anæsthesia, would have shown that the head was lying in one iliac fossa. I think that the term "transverse presentation," besides being a bad one, is a dangerous one, as it tends to the belief that the head lies low down on one side while the breech lies at the same level on the other side, and that the fundus does not reach up as high as usual. For this to be possible there must be a loose abdominal wall, a large amount of liquor amnii, and a small child, possibly dead. I have seen only one case in which a living fœtus, at term, lay really transversely. In the large majority of cases a so-called transverse presentation has only just missed being a first vertex presentation, obliquity of the uterus, or, much less often, contraction of the brim of the pelvis or obstruction due to a tumour having steered the head to one side of the middle line. Inspection of the abdomen or a perfunctory abdominal examination may not detect any gross deviation from the normal, the breech being at the fundus, very nearly in the middle line, but careful examination will show that the head is not in the middle line and that the fingers can be pressed down on the other side into the brim of the pelvis, which is not occupied by any large part of the fœtus.

Occipito-posterior positions provide a large proportion of cases of difficult labour, and there are still many men who consider that the only method of dealing with the difficulty caused by incomplete flexion of the head with failure of the occiput to rotate to the front, is to wait for a reasonable time and then pull with the forceps with sufficient vigour to overcome the obstruction caused by the passage of the larger diameter through the pelvis. There is still a great tendency to treat the injury to, or death of, the child and tearing of the mother's tissues as being a necessary result of the inherent difficulty of the case, a regrettable result, but not one for which the attendant need blame himself at all. This attitude of mind is due, largely, to the idea that manual rotation of the head when the occiput has remained behind is all very well to be put in text-books and lectures, but is not a manœuvre for practical men, and I am convinced, from conversation with many men in general practice, that there are large numbers of men in busy midwifery practice who have never even attempted manual rotation of the head. If they did attempt it they would find that in the large majority of cases they would be successful in converting a difficult case into an easy one, and that the mother would be saved from much unnecessary injury. In this condition as well something can be done in the way of prevention. The late Dr. Ballantyne, of Edinburgh, one of the chief pioneers in antenatal work, told me on the last occasion on which I met him, shortly before his death, that he had discovered a simple way, absolutely devoid of danger, of converting an occipito-posterior position into an occipito-anterior position before the onset of labour. He had found that a towel folded into a firm pad, pressed against the child's back, and kept in position by an abdominal binder, caused rotation of the child's body, with the head away from the pressure of the pad, so that what had been a third position of the vertex became converted into a left occipito-anterior position. Others have followed Dr. Ballantyne's teaching with success.

### *Premature Induction.*

Induction of premature labour in cases of a moderate degree of contraction of the pelvis or undue size of the fœtal head, and induction of labour in cases of post-maturity are valuable methods of preventing difficulties in labour. There is still a certain amount of difference of opinion as to the advisability of interference in cases in which labour does not come on at the expected time, but many men have a working rule that if the menstrual history and other data, especially the size of the child, leave little doubt that the calculated date is the correct one, it is best to terminate the pregnancy when ten days have elapsed with no sign of the onset of labour. The reason for making this rule is that if the onset of labour is delayed for three weeks or so there may be difficulty due to excessive ossification of the bones of the vault, and also that death during labour is liable to occur in cases of post-maturity, without obvious cause. At and after term induction of labour usually offers no difficulty, a dose of castor oil, or the castor oil, quinine, and hot-bath method nearly always being successful in starting labour. The same method may be followed by success three or four weeks before term, but, in my own experience, it often fails, and the method of induction of labour by insertion of bougies has to be adopted. Induction of premature labour is looked on with little approval by some, while others have the highest opinion of its usefulness. Personally, I have very often induced labour prematurely, and have never regretted having done so. Those who disapprove of induction of premature labour do so chiefly because they consider that the chances of the infant are small. This view is due to non-observance of two essential rules: (1) that labour must not be induced, for the sake of the baby, earlier than the thirty-fourth week, nor, if possible, before the thirty-sixth week; and (2) that, once the labour has started, delivery should be left to the natural forces, assistance with the forceps being avoided. There is an old superstition, dating from the time of Hippocrates, that seven months' babies live and eight months' babies die, and because of this absolutely erroneous idea labour has often been induced as early as the twenty-eight or thirtieth week with the result that the baby of 3 to 3½ lb. weight survives its birth only a short time. A baby born only four weeks early has as good a chance of survival as if it had been born at full-time. The head of a premature baby, being imperfectly ossified, will not stand pressure from the forceps which would be harmless to a full-time infant, and bipolar version after induction of premature labour is often fatal to the baby.

An objection often brought against the method of induction of premature labour by insertion of bougies is that it is uncertain or very slow. I have never been content with insertion of bougies alone, but have always added to it the method of separating the membranes round the internal os, taught, I believe, by Sir John Williams many years ago. An anæsthetic should always be given, as it makes asepsis much more easy of attainment. The anterior lip of the cervix is fixed by a blunt pair of forceps, such as ring forceps or ovum forceps, and the gloved forefinger, pushed through the cervical canal, separates the membranes all round the internal os as far as can be reached. After this three bougies are inserted. When this method is used in a parous woman the labour may be over in 24 hours, while in a primigravida labour has usually begun in 24 hours.

### *Patience.*

If one had been asked 25 years ago what were the essentials of successful midwifery one would have answered "asepsis and patience." To these must now be added antenatal supervision, but the other two remain as essential as before. To put as briefly as possible the difference between the conduct of labour in a lying-in ward and in general practice, one would say that in a lying-in ward the case is left to Nature as much as possible, and that the number of hours is considered of little importance as long as neither the mother nor the child shows signs of suffering from prolongation of the labour. If the pains are sluggish, or the head is large, or the pelvis is slightly contracted, or the pelvic floor is unusually strong, plenty of time is given for moulding to occur, and assistance is given only when the natural forces have proved themselves to be unable to effect delivery without aid. Labour lasting more than 24 hours is common in a lying-in ward, whereas in some practices it is a rare event. In private practice, on the other hand, the natural forces are not always given a fair chance, and artificial aid is given much sooner. The reasons for this comparative hurry are many. The friends and relatives, who may be present in force, are very much inclined to worry the doctor and to urge him to terminate the labour as soon as possible. The patient herself is very likely to beg the doctor to let her have chloroform and the forceps. The doctor is probably a busy man, with multifarious duties, and he cannot afford to spend long hours watching a natural process. With all these influences at work is it to be wondered at that "I think that I can get the forceps on now" is much more commonly heard than "I consider that she needs help with the forceps"? I may be told that I am old-fashioned, and also that I have no right to criticise the conduct of labour at which I was not present, but I am speaking from my own experience when I say that the midwifery forceps and pituitary extract have, in some practices, taken the place of patience. I have often had to operate, for ruptured perineum or prolapse, on patients who were said to have had a very difficult first labour, terminated by the forceps, although the labour from start to finish did not last 12 hours. In a multipara it may be fairly safe to deliver with the forceps as soon as the cervix has become fully dilated, but it cannot be safe to deliver a primigravida as soon as the forceps can be applied, as little if any moulding can have occurred, and no dilatation of the pelvic floor has taken place and the cervix is not yet fully dilated. In such a case damage must be done. The doctor has to pull hard, so he calls it a difficult labour, and the mother's tissues must be torn or stretched so quickly that they may never recover tone completely. I have seen many women who had had very difficult forceps deliveries in their first labours, so much so that they were told that they had pelvic contraction, and yet delivered themselves easily of 8½ or 9 lb. babies subsequently. I am certain that if the men who say that they always deliver with the forceps in a primigravida, if the head does not come down quickly after full dilatation of the cervix, would examine their patients afterwards they would be so much impressed by the evidence of tears of the cervix and vagina that they would alter their views and agree that the ideal time to apply the forceps in a primigravida is when the scalp is in sight. If it were possible to bring the head down half an inch or an inch not much harm would be done, but the trouble is that when the forceps is applied too soon the cervix still offers some resistance, and when the head does move it comes down with a run and the damage is done in an instant. These cases are what I referred to earlier as cases in which the difficulty is imaginary, not real, and they are responsible for a considerable proportion of the cases of difficult labour in some practices, in spite of the improvement in midwifery which has taken place.

### *Filling Up the Time.*

The doctrine of patience in midwifery is no new thing. Smellie, one of the founders of modern midwifery, who wrote 170 years ago, knew the value of patience and the importance of not letting his judgment be influenced by the patient's friends. Among his notes are to be read the following:

> "We prescribed a mixture to amuse the patient, and in about five hours she was safely delivered. . . . The membranes had been broke a long time. Finding the woman very uneasy and her friends importunate, I amused them (sic) with a palatable mixture of which I directed the patient to take two spoonfuls every half hour, my intention being to gain time."

Matthews Duncan, in 1870, wrote:

> "There is no obstetric doctrine more deeply impressed on all the valuable literature of our profession than this; that the mere duration of labour considered in itself and apart from other causes of danger likely to spring up as the process becomes protracted, is of little importance so far at least as the recovery of the mother is concerned. This doctrine is embodied in the ever-recurring inculcation of patience as the highest virtue of both mother and attendant in many and varied circumstances of distress during labour."

I will quote here some remarks that I made to students a few years ago, and apologise in advance if they are too elementary to be apposite.

> "Apart from the gross misdemeanours in the employment of the forceps—viz., attempts at extraction of the head before the dilatation of the cervix is complete, it is a common practice to deliver with the forceps, simply because labour is rather slow, because 'things are hanging fire'; in other words, because the busy doctor wants to get off to see some other patient or to go to bed. In some of these cases one is told afterwards that the delivery was very difficult indeed. The most comforting reflection that a doctor can make at the end of a difficult or tedious midwifery case is: 'Well, thank goodness, I have not done her any harm!' In such a case as that just mentioned—viz., the forceps being used simply and solely to expedite the labour, the doctor should ask himself: 'Can I do any harm by delivering with the forceps now?' If the patient is a primigravida and the scalp is not yet in sight, the honest answer must be: 'Yes, I may do some harm. I may stretch the pelvic floor too quickly or cause a tear.' A plan which I used to find useful in a case where I was bored with waiting and wanted to get away, was to make a vow that I would not even boil the forceps until at least two hours had gone by. In almost every case there was no need for the forceps to be boiled at the end of that time. It is foolish to be influenced by the anxiety of the relatives and to deliver with the forceps against your better judgment. It is much wiser to take the relatives into your confidence. Tell the mother and the husband that all is well, that you could deliver almost immediately if you thought it wise, but it would not be best for either the patient or the baby, and that it would be wiser to leave things to Nature. If you must leave the house, tell them that you have given a sedative and hope that the patient will get some rest, that when she wakes up the pains will be better, and that should the child come down rapidly and be born before your return, they need have no anxiety, as you have made certain that all is well and that the experienced nurse knows exactly what to do. You will nearly always find that relatives appreciate highly this taking them into your confidence, and rise to the occasion and agree that you are wise in being careful and leaving things to Nature."

### *An Example of Prevention.*

Some may think that the idea of preventing difficulties in labour on any large scale is Utopian, but I can bring forward proof that it is practicable. As an example of what antenatal supervision, asepsis, and patience will do in cases of delivery in the patients' own homes let me give the results of work in the district of the East End Mothers' Lying-in Home. In 1923, 1262 women were delivered. The forceps was used in 20 cases—i.e., under 1·6 per cent. There were three cases of morbidity in the puerperium and no death. In 1924 there were 1119 patients, 10 cases of forceps delivery—i.e., 0·9 per cent., 8 cases of morbidity, and no death. In 1925, 1092 cases were attended. There were 22 cases of forceps delivery—i.e., 2 per cent., chiefly in tired multiparæ. The average weight of the babies delivered with the forceps was 9 lb. There were two deaths in the 1092 cases, one from acute hæmorrhagic pancreatitis and the other a case of sudden death in a very fat woman with fatty degeneration of the heart, immediately after a spontaneous labour.

I emphasise the results in this district because the East End Mothers' Lying-in Home is run by general practitioners. There is a large consulting staff, but the position of consultant to the Home is almost entirely honorary. I am practically the only member of the consulting staff who is ever called in, and I have been asked to see patients there about ten times in the last 20 years. I am claiming no credit for the figures which I have quoted.

I have hardly touched on the conduct of difficult cases, but I do not regret this, as I consider that their prevention is a more important subject. I have said a good deal about ideals. We must all recognise, with regret, that in our practice we cannot always attain to our ideals, but as we are all discontented with the present results of midwifery we must do what we can towards better results in the future, and can do this only if we have an ideal at which to aim.

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## ON THE USE OF
## SILVER FILIGREE IN INGUINAL HERNIA.

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SOME time ago in THE LANCET[1] an attempt was made to defend the use of filigree against an attack supported, as I tried to show, by evidence either inadequate or irrelevant. I was not at that time in a position to press its claims otherwise than by the expression of a firm personal conviction and by brief histories of a few rather recent cases. To test the value of the method by the results obtained, an impartial inquiry has been instituted based on the records of the Seamen's Hospital.

The following figures show the number of herniæ dealt with by the filigree method from 1910.

1910, 21; 1911, 22; 1912, 25; 1913, 57; 1914, 24; 1915, 9; 1916, 26; 1917, 35; 1918, 23; 1919, 9; 1920, 20; 1921, 11; 1922, 10; 1923, 21; 1924, 35; total for 15 years, 348.

Table I. shows percentage relation to total operations during the last five years. The lower incidence in years 1915 and 1919 is due to conditions determined

TABLE I.—*Total Number of Herniæ Operated on at the Seamen's Hospital, 1920–24.*

| Year. | Total. | Filigree operations. |
|---|---|---|
| 1920 .. .. .. | 95 | 20 (20 %) |
| 1921 .. .. .. | 130 | 11 (8·5 %) |
| 1922 .. .. .. | 131 | 10 (8 %) |
| 1923 .. .. .. | 152 | 21 (14 %) |
| 1924 .. .. .. | 155 | 35 (22·5 %) |
| Total for 5 years | 663 | 97 (14·5 %) |

by the beginning and ending of the war. The diminished use in 1921 is explained by the retirement from the staff of Mr. L. McGavin, the protagonist and introducer of the filigree in this country. It is significant that a staff foreign to the filigree tradition and uninfluenced by the enthusiasm and example of its most ardent advocate, should have adopted the method with increasing frequency, as shown by the figures for 1922, 1923, and 1924. This independent testimony, based solely on personal experience, is surely noteworthy.

Records of personal experience show that I have used filigree in 60 cases of inguinal hernia at the Seamen's Hospital, and that I have never had occasion to remove a filigree from any one of my own cases or those of my colleagues past or present. The possible suggestion that filigree is used without discrimination is negatived by the fact that the relation of filigree to total operations in my series has varied in different years from 11 to 30 per cent., and that my total of filigree operations is constituted as follows: 75 per cent. direct or large scrotal; 12 per cent. recurrent; 13 per cent. oblique with unduly deficient musculature. As a further check on general and personal experience evidence as to remote results has been collected by means of a form of questionnaire sent out to 50 cases dating back to 1910. The cases were selected impartially, except that preference was given to those that appeared from details of address, &c. to be more likely to be traced.

The form of questionnaire was as follows:—

1. Did the wound break down or cause any trouble after you were discharged from hospital?
2. Have you noticed any swelling in the wound?
3. Have you had any pain in the wound? If so, for how long? Have you any pain now?
4. What is your present occupation?
5. Does the wound interfere in any way with your work? If so, how?

Twenty replies were received, a satisfactory number in view of the shifting nature of a seafaring population.

TABLE II.—*Present Condition of 20 Patients with Filigrees.*

| Year. | No. of case. | Operation and No. of filigrees used. | Comments. | Present occupation. |
|---|---|---|---|---|
| 1910 | 1 | Double I.H. (F.4). | Slight discomfort at times. Other A.N.* | Seaman. |
| 1911 | 2 | I.H. ? side (F.2). | All A.N. | Lighterman. |
| | 3 | " | " | Motor-driver |
| 1913 | 4 | L.I.H. (F.2). | Slight pain occasionally. Other A.N. | Labourer. |
| 1915 | 5 | Recur. I.H. (F.2). | All A.N. | Labourer's assistant. |
| 1917 | 6 | Double I.H. (F.4). | " | Labourer. |
| | 7 | R.I.H. (F.2). | Occasional tenderness. Other A.N. | Dock labourer. |
| | 8 | Recur. I.H. (F.1). | All A.N. | Lighterman. |
| | 9 | Recur. (F.2). | Occasional pain on standing. Other A.N. | Waterman. |
| 1918 | 10 | Double I.H. (F.4). | All A.N. | Engineer. |
| | 11 | Strang. I.H. (F.2). | " | Labourer. |
| 1919 | 12 | Double I.H. (F.3). | " | Messenger. |
| | 13 | R.I.H. (F.1). | " | Labourer. |
| | 14 | L.I.H. (F.1). | " | Marine engineer. |
| 1920 | 15 | R.I.H. (F.1). | " | Ship's cook. |
| | 16 | " | Slight swelling. Brooks appliance. Other A.N. | Ship's steward. |
| 1921 | 17 | " | All A.N. | Seaman. |
| 1922 | 18 | R.I.H. (F.2). | " | Fireman. |
| | 19 | L.I.H. (F.1). | " | Warehouseman. |
| | 20 | R.I.H. | " | Seaman. |

* It will be noted that as regards the condition of the operation area negative answers (A.N.) indicate satisfactory results.

The results are indicated in Table II. All the operations, with two exceptions. were performed either by Mr. McGavin or myself. Of these 20, 15 cases have absolutely nothing untoward to report. They have remained cured for periods varying from 3–15 years, and are still engaged for the most part in laborious occupations. Four cases complain of occasional pain or tenderness, but this has in no case interfered with their work. Doubt as to cure arises only in one case. This patient, a ship's steward, reports slight swelling, and is wearing a Brooks appliance. The patient says he noticed the swelling immediately after the operation, and that it has not increased in size in the five years that have elapsed since operation. He is still engaged as a ship's steward, an occupation entailing a good deal of heavy lifting

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[1] THE LANCET, 1924, i., 385.

Results such as these, particularly in view of the class of patient concerned, and the laborious occupations pursued by them cannot, I think, be excelled—if, indeed, they can be equalled—by any other method. A further convincing testimony to the merits of the method is afforded by the fact that during the last four years four of my professional colleagues at the Seamen's Hospital have submitted themselves to filigree implantation

# TOXIC (SUBDURAL) MENINGEAL HÆMORRHAGE.

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MENINGEAL hæmorrhages are known to occur in the course of the specific infectious fevers, in purpura, tuberculous and other forms of meningitis, and heat-stroke. They may occur spontaneously in young females without previous disease at the menstrual periods. Such hæmorrhages are, however, only complications, and their presence is seldom manifested by definite clinical signs, or at least is overshadowed by the original disease

There appears to us, however, to be another fairly well-defined clinical type, the chief characteristics of which are spontaneous bleeding without recognisable previous disease—meningeal signs mainly irritative—short duration of attack, and complete recovery following lumbar puncture The fluid withdrawn by puncture varies from a mere coloration to practically pure blood and is always sterile on cultivation.

We have met with three such cases within the last few years, and are inclined to believe the condition more common than the number of the recorded cases would indicate

### *The Cases Described.*

CASE 1.—M. B., a girl of 13, was seen on Sept. 29th, 1925, complaining of severe headache and pain in the right chest, onset sudden, she having been quite well the previous day There was great prostration, temperature 104° F., pulse 120 A pleuritic rub was detected in the left lower axillary region, although no symptoms were referred here.

30th: Headache more intense, diffused, and continuous during the night. Pain complained of in the sternal and præcordial areas. Temperature 101.5°, pulse 130 Slight nuchal rigidity and tenderness observed Knee-jerks sluggish and easily exhausted A quite definite pleuro-pericardial rub was present just inside the apex. The urine contained a considerable quantity of albumin.

Oct. 1st: Headache severe and persistent, tongue dry and furred, pupils widely dilated, equal and active. No pain in chest, pleuro-pericardial friction gone, but apex beat 1 in. outside nipple line and a soft systolic bruit present Neck stiffer and more painful on movement, with pressure pain over the cervical vertebræ and lateral neck muscles, extending as far as the shoulders. Temperature and pulse as before Kernig's sign indefinite, knee-jerks abolished, and superficial reflexes hardly obtainable Tache cérébrale present. Babinski's reflex plantar.

2nd: General condition considerably worse, patient looking very ill and complaining bitterly of headache; has vomited once. Tongue very heavily furred. Marked photophobia. Pupils as before. Kernig definitely positive and slight movements of the head very painful. Under light anæsthesia lumbar puncture was done and about 15 c.cm. of blood withdrawn under some tension. By evening the temperature had fallen to 100°, pulse 110, no headache since recovering from anæsthetic. Kernig still positive, but cervical signs much less acute.

3rd: Patient slept all night and declared she felt quite well. Temperature normal, pulse 80, tongue nearly clean, no headache nor rigidity of neck, only slight tenderness on pressure Kernig negative. Knee-jerks still absent Appetite returning. In two days the knee reflexes had become brisk, the heart normal, and recovery seemed complete. Examination of the fluid withdrawn showed it to be practically pure blood; no cerebro-spinal fluid could be separated; sterile on culture.

Two points in the previous history were under consideration: 1 Some years ago the patient was under the care of one of us (A. M. N. P.) with a suspicion of T.B. lung, but nothing definite was found after careful clinical and radiological investigation. 2 For some four or five week-ends previous to this illness she had attacks of intense coryza with great malaise, lasting about two days On Sept. 28th, 1925, she was perfectly well. Recently her father has also suffered from the same kind of attack.

Two similar cases came under the notice of one of us (A. M. N. P.) during the prevalence of cerebro-spinal fever some years ago.

CASE 2.—E. H., female, aged 31. Admitted to the isolation hospital with symptoms suggestive of meningitis, very sudden onset, headache, vomiting, pain and stiffness in the back of the neck, rigidity of the spine, rise of temperature, and general malaise. Lumbar puncture gave a homogeneous mixture of blood and cerebro-spinal fluid. The fluid was sterile. The case was diagnosed as one of meningeal hæmorrhage Recovery was rapid and uninterrupted, the whole of the symptoms disappearing within a day or two.

CASE 3.—H. O., male, aged 42. Admitted to the isolation hospital as a possible case of cerebro-spinal fever The symptoms were similar to the above. Lumbar puncture revealed the same homogeneous mixture of blood and cerebro-spinal fluid. The fluid was sterile Immediate improvement followed the relief of tension and the patient made a complete recovery.

### *Cases Recorded in the Literature*

The condition is hardly mentioned in the standard English works on general medicine or in those dealing specially with diseases of the brain and spinal cord. Branson[1] records two cases—probably influenzal, with bloody fluid withdrawn under considerable pressure by lumbar puncture; the spinal symptoms were slight and followed by complete recovery. Emile-Weil, Isch-Wall et Pollet[2] report a case of pure meningeal hæmorrhage in a woman, with symptoms of mild cervical irritation and rise of temperature and which recovered in a few days after puncture The cerebro-spinal fluid was blood-stained. This patient (among others) showed delayed coagulation of the blood and they stress this as a factor in these hæmorrhages Raymond[3] draws attention to the early and abundant albuminuria in this condition and notes exaggeration of the reflexes here as contrasted with cerebro-spinal fever. One may infer that he writes from personal knowledge of this condition, though we cannot find that he has published any cases.

In our first case the quantity of albumin in the urine on the second day was remarkable, but the reflexes were depressed or absent. At the time of puncture the blood showed a normal coagulation time. The hæmorrhage would appear to have been the result of some general infection, as witness the cardiac and pleural signs, probably an influenzal, intestinal, or naso-pharyngeal toxæmia.

Meningeal hæmorrhage may closely simulate encephalitis lethargica, the diagnosis being established only on lumbar puncture. Rathery et Bonnard[4] give a very full report of such a case in a girl of 18, with severe headache, vomiting, rigidity of neck, positive Kernig, and complete somnolence—all of sudden onset and no history of previous disease Lumbar puncture revealed a cerebro-spinal fluid, frankly red throughout and sterile in culture. There was a marked polynuclear leucocytosis (33,000). The stupor gradually cleared up under repeated punctures and she was well in a month. A rat inoculated with the cerebro-spinal fluid reacted but did not succumb. Flessinger et Janet[5] record a fatal case of meningeal hæmorrhage, with an even greater similarity to encephalitis lethargica

A woman aged 40, apparently in good health, was suddenly affected with loss of consciousness, intense headache, and rigidity of neck; a positive Kernig was present and some fever Somnolence and stupor supervened and persisted till death, a month later; there was also hemiplegia and later other paralyses. The spinal fluid was at first uniformly mixed with blood, the colour becoming less toward the end of her illness. Careful histological examination of the brain showed no trace of perivascular congestion nor inflammatory reaction; inoculation of a rabbit with an extract of brain and spinal fluid, according to Levaditi's technique, had no effect on the animal's health.

Otero[6] records two cases of meningeal hæmorrhage following a wave of epidemic encephalitis, the symptoms of which were: sudden and severe headache and loss of consciousness. The condition persisted for several days and recurred in one case five to six months later. In both complete recovery followed lumbar puncture, which was done six times in the first and three times in the second case. The cerebro-spinal fluid was sterile.

The association of cases of meningeal hæmorrhage with epidemic encephalitis or cerebro-spinal fever is probably accidental; there is no evidence whatever of any ætiological relationship. Although these latter cases are more severe than the former, and in spite of the occurrence of stupor (and in one case of paralysis), we think they belong to the same group and have a similar ætiology. It will be noted that only one case in the whole series died. The disease may therefore be considered a comparatively benign one. Furthermore, there does not appear to be any definite relationship between the quantity of blood present on puncture and the severity of the disease, thus lending support to the toxic nature of these cases.

*References.*—1. Branson (quoted by Osler and McCrae): Practice of Med., 9th ed. 2. Emile-Weil, Isch-Wall et Pollet: Bull. Soc. Méd., Hôp. de Paris, March, 1924. 3. Raymond: Jour. de Méd. et Chir., 1922. 4. Rathery et Bonnard: Bull. et Mém. Soc. Méd. des Hôp., March, 1920. 5. Flessinger et Janet: Ibid, October, 1920. 6. Otero: Rev. Med. de Uruguay, Abst. Jour. Amer. Med. Assoc., October, 1924.

# Clinical and Laboratory Notes.

## TWO CASES OF PUERPERAL FEVER.

By ROBERT SWYER, M.R.C.S. ENG., D.P.H.,

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THE cases here recorded present interesting and unusual features.

CASE 1. *Thrombosis of the Inferior Vena Cava.*—The patient was a multipara aged 42, with ten children all living. She was confined on Nov. 15th, 1924, and admitted to the North-Western Hospital a week later, certified as puerperal fever. It had been a breech presentation, the labour lasting five hours and being followed by retention of the placenta, which was removed manually by her medical attendant after a further period of two and a half hours. The temperature was said to have been raised ever since confinement.

*Condition on Admission.*—Temperature 99° F., pulse 100, and respirations 24. Uterus firm and 2¼ inches below umbilicus, lochia scanty and not offensive; slight tenderness in the right iliac fossa. She was treated with hot vaginal douches of lysol solution four-hourly, and mist. mag. sulph. co. mane et nocte. For a week the temperature continued to swing between 98° and 101° and the pulse-rate between 100 and 140. In spite of this her general condition appeared to be improving until the night of Nov. 26th, when she had a slight rigor, followed by two more during the next night. On the 29th I introduced a catheter into the uterus and injected 10 c.cm. of sterile glycerine; during this procedure much foul brownish discharge issued from the os uteri. The catheter was left in situ for six hours, the patient being propped up in bed. During the next day she appeared better until 10 P.M., when the temperature rose to 105°. The injection of glycerine was repeated on Dec. 1st and 4th when a considerable amount of yellowish pus escaped from the uterus. Bimanual examination revealed an indurated cord outside the right vaginal wall running up to the right lateral fornix. It was not tender.

On Dec. 7th there was pain and swelling of the left leg which increased until the 13th. Rigors occurred on Dec. 3rd, 4th, and 13th, the last one accompanied by air-hunger and a very rapid, fluttering pulse. Breathing was rapid and laboured during the 14th but improved next day, as did also the heart. Further rigors occurred on the 16th and 18th. From Dec. 13th the swelling of the left leg diminished until on the 29th it was practically normal, but on this day the right became swollen. On Jan. 3rd, 1925, hæmorrhages appeared in the skin of the right leg. On Jan. 9th the patient said she did not feel so well although she had had a good night. At 8.15 A.M. she suddenly became very pale and cyanosed, but did not complain. The cyanosis lasted about half an hour and was followed by blanching, and at 9.20 A.M. she looked moribund. She died at 1.45 P.M. the same day.

*Post-mortem Examination.*—There were many hæmorrhages into the skin of the right leg, which was œdematous and about half as large again as the left. The brain was normal. A small quantity of turbid fluid and a few recent fibrous adhesions were present in the left pleural cavity. Patches of broncho-pneumonia and pyæmic abscesses were present in both lungs, the left being much more affected than the right. At one of the secondary branchings of the right pulmonary artery a small whitish embolus was lodged. The heart and coronary arteries appeared normal. The uterus was well involuted and empty. There was some thickening of the right broad ligament which was probably a partly resolved parametritis. The right internal iliac vein and inferior vena cava were filled with a suppurating blood-clot. A dark red fairly firm clot extended down the right femoral vein and a similar clot filled the left common iliac and femoral veins down into the leg. The spleen was much enlarged and very friable. The right kidney was larger and paler than the left. About 50 small gall-stones were found in the gall-bladder. The remaining organs appeared normal.

A striking feature of the case was the persistently high pulse-rate even during apyrexial periods, varying between 92 and 140 with an average of about 116. Except when rigors were occurring pyrexia was not marked; indeed, there were periods of several days when temperature did not rise above 99°.

CASE 2. *Recovery after Severe Puerperal Septicæmia.*—The patient, aged 37, was admitted to the North-Western Hospital on Sept. 24th, 1925, with the following history. On July 23rd of that year she had an incomplete abortion, the placenta being retained. The period of gestation was about three months. She did not go to bed but went about as usual and felt well until Sept. 13th, when she had abdominal pain and a "flooding." Two days later the placenta came away. On the 21st she had general pains, delirium, and sleeplessness. Dyspnœa was present on the 22nd.

*Condition on Admission.*—She looked extremely ill. The breath was fœtid, tongue dry and covered with brown fur. Temperature 103° F., pulse 110, respirations 38. There were signs of bronchitis in both lungs but no consolidation. The heart sounds were normal. There were no signs of laceration of perineum or vagina. Bimanually the uterus seemed a little enlarged but was freely movable. No tenderness was present in the vaginal vault, but I could feel a slight induration extending laterally from the cervix on the right side. There was no uterine or vaginal discharge. A small indurated swelling was present on the inner aspect of the right thigh. She remained drowsy and delirious until Sept. 26th when she was seen by Dr. L. Colebrook, of St. Mary's Hospital. He and I then believed her to be dying. A blood culture was made which showed a hæmolytic streptococcus. The number of organisms was 300 per c.cm. The following day an inflammatory swelling appeared on the right forearm. On the 28th a superficial pustule appeared on the right knee. On Oct. 2nd the abscess on the right thigh was opened and drained. At this time she complained of pain in the right shoulder and upper arm. On the 5th the abscess had ceased to discharge but another small abscess appeared above it accompanied by induration of the right labium majus. The pain in the right arm had become more severe but no physical signs could be detected. On the 8th the temperature, which up till then had been swinging between 104° and 97°, became normal, and remained so until her discharge from hospital.

On the 13th there was definite wasting of the muscles of the right hand with marked weakness of grip. Marked dryness and hardening of the skin on tip of thumb and first finger was noticeable. The paralysis rapidly increased until three days later the right arm was completely paralysed and flaccid. There were no sensory changes. On the 28th another abscess developed over the middle third of the right thigh; by this time power was beginning to return to the right arm and the pain was much less severe. The abscess was opened on Nov. 7th and had healed by the 18th. On Nov. 22nd a painful swelling appeared at the junction of the right fourth rib with the costal cartilage.

By Nov. 30th the general condition had so far improved that she was allowed to sit up in a chair, and ten days later got up in clothes. During this time the swelling on the chest had been gradually increasing in size but was not very *ender and never became soft*; a few days later it began o diminish and eventually disappeared. The paralysis of he arm had practically disappeared by Feb. 2nd, 1926, when the patient was discharged from hospital.

I have never before heard of a case recovering after so severe an infection of the blood with a hæmolytic streptococcus and having all the local esions confined to the right side of the body. She had no injections or inoculations of any kind while in hospital.

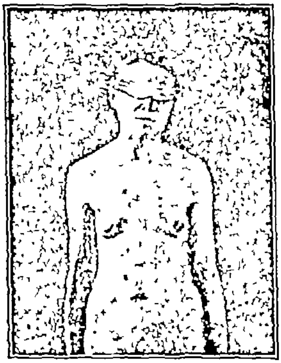
## WIDESPREAD SECONDARY GROWTHS FROM VULVAL CANCER.

By A. E. CHISHOLM, F.R.C.S. EDIN.,
ASSISTANT TO GYNÆCOLOGICAL AND OBSTETRICAL DEPARTMENT, ROYAL INFIRMARY, DUNDEE.

THE following case, showing a quite unusual spread of cancer, seems to be worthy of record.

The patient, a woman of 43, was admitted to the gynæcological department of Dundee Royal Infirmary on April 5th, 1924. She had had six children, the last one born two years previously. She had noticed a wart-like growth on the left labium for upwards of a year, and for ten months it had caused severe pain at times. As time went on it increased in size, ulcerated, and became more painful.

The nodule was situated towards the anterior end of the left labium minus. It was hard, ulcerated, and mobile. There was no induration round about it. The glands in the left groin were moderately enlarged. Those in the right groin were rather more palpable than normal. The patient was not emaciated. No other secondary growths were found.



Photograph taken in October, 1924, showing nodules on abdomen, chest, and neck.

On April 15th, 1924, I excised the tumour along with the left labium minus and dissected out the glands of the left groin. The pathological report on the tumour and glands indicated flat-celled epithelioma. The patient was discharged from hospital on May 17th, 1924.

I had the opportunity of making a later examination in October, 1924. There was definite emaciation, but no recurrence of disease in the vulva, and a per vaginam examination revealed nothing abnormal. A very small subcutaneous nodule could be felt just below the outer limit of the left inguinal scar. The glands in the right groin were markedly enlarged. Dozens of discrete, subcutaneous, mobile nodules, of varying sizes, could be seen or felt over the front, back, and sides of the abdomen and chest. The axillary glands were enlarged, as also those of the right anterior triangle of the neck and of both posterior triangles. There was a nodule just in front of the left masseter and one above the left eyebrow. On Nov. 11th, 1924, I visited the patient in her house. She was looking very ill and had a good deal of pain in the back. The movements of the lumbar spine were pretty good. There was no evidence of involvement of internal organs. The subcutaneous nodules showed evidence of growth since the last examination and some of them were taking on a livid appearance. The nodules on the anterior abdominal wall were innumerable.

The patient died on Jan. 6th, 1925. I did not wish to trouble her, in her weak state, by taking away a nodule under local anæsthesia for microscopic examination, and I did not hear of her death for some time after its occurrence, but there can be no doubt that the nodules were cancerous, secondary to, and of the same nature as, the original vulval tumour.

Vulval cancer is frequently peculiarly fatal, and any suspicion of such a condition being present should be investigated as soon as found. The accompanying photograph gives a very poor idea of the actual condition. Properly to estimate the multiplicity of the nodules, the sense of touch was required.

I am indebted to Prof. J. A. Kynoch for permission to publish the case.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF OPHTHALMOLOGY.

A MEETING of this Section was held on May 14th, Sir ARNOLD LAWSON, the President, occupying the chair.

### *Black-spot Choroiditis.*

Mr. RAYNER D. BATTEN gave a demonstration of drawings—shown by means of the epidiascope—illustrating, first, black-spot choroiditis, secondly, a special form of senile retino-choroidal atrophy of the macula. Black-spot choroiditis, he said, was a fundus disease which had not received due attention from either the clinician or the pathologist. It occurred in association with myopia, but was not peculiar to it, occurring, as it did sometimes, in people with hypermetropia. It was not confined to the macula, but he considered it was limited to the central area, that embraced by the superior and inferior temporal vessels. He recognised three forms of black-spot choroiditis. The generally recognised form was found, usually, in high myopia. In this the onset was acute, the process coming on with dramatic suddenness. There might be an accompanying hæmorrhage, but in his experience hæmorrhage had never been a marked feature. He showed a number of slides illustrative of this condition, and gave a brief account of the ophthalmic history of each patient. In another form of the condition the onset was not quite so acute, and the area of choroidal atrophy, after it had been formed, tended to get smaller, and the eye might regain some useful vision. In some of these patients there was seen first a blurred, œdematous area, without any black spot being visible. Later a black spot appeared, a diffuse hæmorrhage, with an area of atrophy around it. In yet another group a black spot was seen, but loss of vision was not a necessary accompaniment. Mr. Batten showed a number of slides of these.

### *Senile Retino-choroidal Atrophy.*

Mr. Batten's last series were of a definite class of macular disease or degeneration in old people, which did not seem to have received much study as a group. In the first few cases of the kind which he saw the patients gave evidence of mental or cerebral disturbance, but the view of physicians had not supported his idea that mental deterioration was a necessary accompaniment. These patients all had arteriosclerosis, however, and there seemed to be nothing else from which they suffered. The ophthalmoscopic picture presented by them warranted their being placed in a distinct class. The retino-choroidal condition was of slow formation and long duration, and it was markedly symmetrical in the two eyes. The superficial layers of the choroid were wanting, leaving the choroidal vessels running across the base. The margins showed retinal changes, with that fine pigment loss which he regarded as evidence of retinal disease.

The PRESIDENT said three of the pictures shown were of his own patients. In two of them the cause was certainly inflammatory, and the patients had severe pyorrhœa. Clearance of the mouth caused the process to stop, but improvement of vision could not be expected owing to the loss of tissue. He had always regarded the formation of pigment as a sign of inflammation rather than of hæmorrhage. He did not regard myopia as causally connected with the changes shown in the first group of drawings.

Mr. J. H. FISHER said it was recognised that the nutrition of the retina at the macula was a matter of supreme importance to the vision of the eye, and with that object the capillary network was more dense and efficient in that situation than in any other part of the choroid coat. The pigmentation which was present in the cases Mr. Batten demonstrated was, presumably, the result of imperfect nutrition. In the arterio-sclerotic group of cases there was an atrophy of the chorio-capillaris which was conspicuous over the central area, with an accumulation of pigment at the periphery, and but little pigment where the chorio-capillaris was obviously deficient. In the myopic cases, however, there was an area of choroidal atrophy, forming a kind of framework, and in the centre of that area was found an accumulation of pigment. In seeking for an explanation of the difference in the two classes of cases, it occurred to him that in the arterio-sclerotic cases there was obstruction of a branch of the artery which conveyed the blood to the chorio-capillaris in the situation of the macula, except at the periphery, and at the periphery the circulation was probably at a low ebb, hence in these cases there would be but very little nutrition of the pigment layer at all. In highly myopic eyes there was a considerable tendency for fissures to occur in the choroid coat, so that choroidal rupture was not unlikely. He thought an explanation on these lines would cover the main differences between the two classes of cases which Mr. Batten had discussed and illustrated.

Mr. E. TREACHER COLLINS said he had seen cases of black spot in the retina, and he believed the general view was that they were due to hæmorrhage. He had seen at an early stage what looked very much like hæmorrhage become a black spot. This bleeding was most probably from choroidal, not from retinal, vessels, and that was one reason why the pigmentation was so dense. The mere fact of a sudden onset strongly suggested hæmorrhage. It was one of the complications which were liable to occur in highly myopic eyes. The immediate result was a loss of central vision. He had watched patients with this condition for several years, but had never seen detachment of retina occur in them. Patients could be assured that they would not lose more than their central vision, though restoration of the vision they had lost could not be expected.

Mr. H. R. JEREMY thought some of the cases described must be due to hæmorrhage, especially in high myopes. He referred to the case of a boy, aged 17, whose myopia was −15 in one eye, −19 in the other. He was already blind in one eye, and while at a dance he suddenly lost the sight of the other. He had a black spot in one eye, and in the other a large hæmorrhage below the macula. The speaker ordered him to bed for six weeks, at the end of which time he had recovered sufficient vision to enable him to get about.

Mr. J. F. CUNNINGHAM described the appearances in a myope who was under his care. In 1910 she had 6/9 vision, and the myopia was −10, and in that eye she rapidly developed coal-black spots, and in one eye there was a circular-shaped retinal detachment. Since the war there had developed in the situation of the black spot a large area of choroidal atrophy, with sclerosis of vessels.

## SECTION OF OTOLOGY.

A MEETING of this Section was held on May 8th, Mr. G. J. JENKINS, the President, in the chair.

The PRESIDENT and Sir STCLAIR THOMSON (President of the Society) referred to the death of Prof. Bradenego, of Naples, whom Sir StClair Thomson described as one of the pioneers of the renascence of otology. A vote of condolence was passed.

### *Mosher's Method of Skin Grafting.*

Mr. LIONEL COLLEDGE gave a description of Mosher's method, which he regarded as very satisfactory. The trouble with moulds and stents, he said, was that a mould was solid, and if a solid mould of a cavity were made in order to cover it with a graft, it would be necessary to reopen the cavity so as to remove the mould. Dr. Mosher stated that he had been using the method for ten years and had found it satisfactory. Strips of gauze which had been soaked in paraffin wax were folded so as to form a cone. Having got the cavity ready, a hollow mould of this gauze was formed. The gauze was softened by putting it into warm water, and then the Thiersch graft was wrapped round it. A satisfactory adhesion resulted, and there was no irritation or sepsis even when the graft was left in position for seven or ten days. It could be very accurately applied, and later the mould could be removed without disturbing the graft.

### *Unusual Case of Acute Mastoiditis.*

Mr. JEFFERSON FAULDER showed a boy, aged 10, whose condition, following a complete mastoid operation in February, 1925, gave rise to much anxiety. There had been a history of earache every spring, with recovery each time until the present illness. In childhood the boy had suffered from pneumonia and hip disease. At the operation Mr. Faulder discovered osteomyelitis of the whole right mastoid process. Before operation the temperature was 102° F.; on the next day it was 105°, and pyrexia continued thereafter, with occasional remissions, for six weeks. There was extreme tenderness over the whole right sterno-mastoid muscle for a week, and slight pain over the left lower chest for the first week. During the whole time the respiration rate was 32 to 24. In the fifth week dullness was noted at the right base, and X rays revealed a dull patch there. At the beginning of the sixth week the patient suddenly coughed up 4 oz. of pus, and thenceforward recovery was rapid. Mr. Faulder said that if he had yielded to the temptation to reinvestigate the lateral sinus and jugular vein and had done so successfully, the cure would probably have been attributed to that procedure. An X ray examination at an earlier stage might have helped the diagnosis. It was suggested that in both lungs there was a weak area, and that one of these was affected by inhalation so as to cause an abscess.

### *Sequestrum of Semicircular Canals.*

Dr. MACDONALD showed a woman, aged 41, on whom the radical mastoid operation was done on the left side in 1921. At that time there was complete loss of hearing, giddiness, and slight horizontal nystagmus to the left. Granulations were present in the antrum, and there was an extensive destruction of ossicles. The discharge from the ear was continuous, and in 1925 the patient had vertigo and left facial paralysis. In March last she was readmitted with left facial paralysis and horizontal nystagmus to the right, complete deafness on the left side, and loss of labyrinth responses on that side. The Wassermann was negative. A sequestrum was removed from the semicircular canals, and the posterior wound was closed by means of a sliding flap.

Other cases were also shown.

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# ROYAL ACADEMY OF MEDICINE IN IRELAND.

## SECTION OF MEDICINE.

A MEETING of this Section was held on April 23rd, Dr. F. C. PURSER, the President, in the chair.

### *Scleroderma.*

Dr. KATHLEEN LYNN showed a case of scleroderma in a child aged 7 months. Scleroderma, she said, generally attacked infants when they were only a few days old, and they usually died in a short time. This infant had been perfectly normal until it was 2 months old, when symptoms became well marked. Recently there seemed to have been some improvement.

Dr. M. DRUMMOND said that the case was in some respects almost unique. Generalised scleroderma was very unusual; he had only seen two cases, one of which had died at 2 months and the other at 5 months.

Dr. W. G. HARVEY congratulated Dr. Lynn on keeping the child alive for so long He had seen a few similar cases, but never one that had done so well as this.

The PRESIDENT said that the case was very interesting and uncommon. He had seen the infant three days previously, and had been told that it was improving almost daily, but although it was certainly no worse he did not think it had improved.

Dr. LYNN, in replying, said that there was apparently no specific history in the family. The father had recovered from tuberculosis; of nine children one was an idiot, three were still alive, and six dead. In scleroderma the temperature was usually raised, but this infant's temperature was always subnormal. There had been no gain in weight, but she thought the child had improved a little; on some days it was better, and on others it was worse.

Dr. DRUMMOND showed a case of Tuberculide of the Skin simulating Leprosy; Dr. HARVEY showed a case of Alkaptonuria; Dr. L. ABRAHAMSON showed a case of Syphilitic Disease of Bone simulating Rheumatoid Arthritis; and Dr. G. E. NESBITT showed electrocardiograms illustrating Ventricular Tachycardia and Left Bundle Branch Heart-block.

Dr. GEOFFREY BEWLEY read notes on two cases of

### *General Paresis treated with Malaria.*

Both cases had a fully positive Wassermann for 0·1 c.cm. of cerebro-spinal fluid, a cell count of about 50 per c.mm., and a strongly positive colloidal gold curve. In each case the rigors occurred every evening and were controlled, after ten had occurred, by the exhibition of quinine. In the first case the mental change was dramatic, the patient becoming perfectly normal in a fortnight and being discharged from the asylum six weeks after treatment, when the Wassermann had become negative for 0·1 c.cm., the cell count almost normal, and the colloidal gold curve a very weak paretic. Four weeks after being discharged, however, this patient had had an acute melancholic attack which necessitated re-certification. In the second case three weeks after treatment the Wassermann had dropped to plus 1 for 0·1 c.cm., and the cell count practically to normal, but the colloidal gold curve remained unchanged The mental condition had slightly but steadily improved.

The PRESIDENT said that the clinical results in these two cases seemed quite as good as any he had seen reported. The pathological results in the first case were very good and made him think that this treatment was of more permanent value than was thought by many who had tried it.

Dr. H. T. BEWLEY said that he had seen these cases frequently, and the first case was a typical case of G.P.I. from the mental point of view. The recovery was the most dramatic thing in mental medicine that he had ever seen. The second illness of the patient was very sudden, and did not look at all like general paralysis. In the second case there was a gradual but very marked improvement. There had been no dramatic change, but the patient was a great deal better and seemed to have improved steadily since having malarial treatment. Dr. Bewley referred to the small degree of general illness which the malaria produced. On the evening of treatment the temperature might be high, but by next morning the patient was perfectly well, and there was none of the depression or weakness commonly seen with high fever.

Dr. H. R. C. RUTHERFORD referred to a report by Dr. S. J. Graham, of the Mental Hospital, Belfast. In 1923 Dr. Graham had treated 70 cases of G.P.I. with malaria, and was able to discharge 30, of whom 21 were absolutely well on discharge and remained well for periods varying from a year to 18 months. Nine went away against his advice, and of these two returned for further treatment; 28 did not improve, and one case failed to develop malaria. Dr. Graham had no doubt that this was a marvellous treatment, although it might not appear very scientific. Dr. John Dunne, of the Richmond Hospital, was also most enthusiastic about the treatment. Although Dr. Graham's cases had got well mentally, they did not improve much physically, and their Wassermann reaction was often still positive, even when they were cured. In this respect Dr. Bewley's results were more favourable.

Dr. E. S. HORGAN referred to the close correspondence between the Wassermann reaction and the colloidal gold test, especially when the Wassermann was done in double dilutions. It would be interesting, he said, to follow up the further clinical symptoms in these cases and see whether the improvement would continue parallel between the colloidal gold test and Wassermann reaction on the one hand, and the symptoms on the other.

Dr. NESBITT referred to a case under treatment.

Dr. A. R. PARSONS asked if there was any danger in giving malarial treatment, and said that it was very difficult to know what was going on in the first patient's brain, or what had caused the reaction.

Dr. G. BEWLEY, in replying, said that he had never had any difficulty in finding malarial parasites. In every film he had taken he had found parasites in every stage. The serological results were not nearly so important as the mental results. There was, of course, danger in the treatment. It was dangerous to allow rigors to run on for a long time and the onset of jaundice or hyperpyrexia was dangerous. He thought, however, that it was quite justifiable to subject a patient to very considerable risk if by doing so there was a good chance of curing an otherwise incurable disease.

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## SECTION OF OBSTETRICS.

AT a meeting of this Section held on April 30th, Dr. D. G. MADILL, the President, took the chair, and Dr. J. S. QUIN reported a case of

### *Polycystic Kidneys Complicating Pregnancy.*

The patient was aged 35, married 12 years, 5-para, and came to see him in February, 1925, with a history of three months' amenorrhœa. She stated that she had had albuminuria in all the pregnancies except the first, and that in the last pregnancy, three years previously, she had been very seriously ill, the infant being born spontaneously at seven months.

The urine was found to be free from albumin. Diet was restricted and a regular daily evacuation of the bowels was ensured, but no more active treatment was considered necessary.

A fortnight later the patient complained of some hæmorrhage with discomfort and bearing-down, as well as great frequency and difficulty in micturition. There was still no albumin in the urine, but vaginal examination revealed an ulcerated and œdematous cervix protruding from the vagina, with a fundus enlarged to correspond with period of pregnancy (three and a half months), lying in retroversion. The cause of the prolapse was now evident. There were two large tumours easily palpable, one on each side of the lower abdomen. That on the right was globular and cystic, the size of a melon, and quite freely movable in all directions. On the left side a hard irregular mass with a limited range of mobility appeared to arise in the region of the pelvic brim, and extended upwards and laterally to the costal margin. No pain or discomfort was complained of, other than that due to the prolapse of the uterus. The uterus was replaced in position and a pessary inserted to retain the cervix at its normal level and allow of a reduction of the swelling and œdema of the tissues. A diagnosis of double ovarian tumours was made, but operation was postponed on account of the possibility of miscarriage and the septic condition of the cervix, and because it was considered that there would be less chance of interrupting the pregnancy at a later date if double ovariotomy had to be done.

The patient was kept under observation for four weeks. The hæmorrhage ceased and pregnancy appeared to be continuing normally; no albumin was at any time present in the urine. She began to complain, however, of pain in each flank, and the tumours, which up to this time had been palpable without discomfort, now became tender. Attacks of pain became more frequent and more severe, and as she was now four and a half months pregnant, operation was decided on. The abdomen was opened and the enlarged *fundus* was found lying in normal mid-line position, with two large retroperitoneal cystic masses, one on each side. The left tumour was a cyst the size of a melon resting on a bed of much smaller cysts, which gave it the feeling of having a pedicle; these sprang from the lower pole of the left kidney. The remainder of the renal tissue on this side was dotted with countless minute cysts, and the whole remainder of the organ was considerably enlarged. The base of the tumour, consisting of the lower pole of the kidney, was cut across. The cyst was removed, the raw area oversewn to control bleeding, and the suture line covered with a pad of the surrounding fat. The right kidney was completely disorganised, and consisted solely of grape-like cysts, no kidney tissue being evident to the naked eye. Some of the cysts were hæmorrhagic, and it was decided to remove the entire mass. This was done and a tube was brought out to the right loin through a small incision in the posterior wall. The peritoneum was closed on each side, and the pregnancy was then terminated by an incision through the fundus, the ovum being removed, and the uterine incision sutured as in a Cæsarean section. The tubes were finally ligated and cut, and the abdomen closed. The patient did quite well, and was passing normal quantities of urine within 24 hours; at no time during her convalescence did her condition give rise to any anxiety.

Since operation, said Dr. Quin, her condition had been quite good and she had been free from pain or discomfort. Her blood pressure at present was 205 and she was passing a very slightly increased amount of urine, of specific gravity 1014. The condition was, of course, progressive, and would eventually terminate in uræmia, but he thought that the treatment carried out might have staved off the crisis.

A specimen of fibroma of the anterior abdominal wall was shown by Dr. LOUIS CASSIDY, and Dr. GIBBON FITZGIBBON read the annual report of the Rotunda Hospital. A discussion followed.

## EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on May 5th, Prof. WILLIAM RUSSELL in the chair. Prof. HERMANN SAHLI and Sir ARCHIBALD GARROD were elected Corresponding Members of the Society.

Dr. CHARLES MCNEIL read a paper on

### *Scrofula and Tubercle*

with reference to ancient and modern doctrines of abnormal constitution in tuberculosis. The term tuberculosis, he said, was of recent origin and dated from the time of Laennec; it included glandular tuberculosis and pulmonary tuberculosis, which from the days of Greek medicine had been described as scrofula and phthisis. It was curious that the idea of constitution was associated with scrofula and phthisis from the earliest time, and its present survival was the direct tradition from the Hippocratic doctrine of a phlegmatic humour or disposition. In the Middle Ages scrofula appeared under a new guise as the king's evil, and for nearly 800 years its cure by the royal touch was practised by the kings of France and England. In the early period of Greek and Latin medicine scrofula and phthisis were not associated with one another, though in each the doctrine of a constitution was taught. But with the revival of a scientific study of medicine—notably by Cullen, who definitely proclaimed some kinship between scrofula and phthisis—an approximation between these two great clinical types of tuberculosis took place. Laennec's new doctrine of the tubercle as the cause of phthisis was a further and very important stage in progress (1820). But the doctrine of constitution, and especially of a scrofulous constitution, still dominated medical thought, this constitution being regarded as the direct cause of the manifestations of scrofula and phthisis; the idea of contagion in phthisis was deliberately rejected by Cullen, Laennec, and, even as late as 1875, by Watson. With the discovery of the tubercle bacillus by Koch (1882) the identity of scrofula and phthisis was established, Laennec's doctrine of the tubercle was vindicated, and the word tuberculosis became supreme. Scrofula had fallen at once from its high position and gradually disappeared from the everyday vocabulary of medicine. It was now, indeed, an obsolete and almost forgotten word, surviving merely in such phrases as "the scrofulous child," scrofulous conjunctivitis and keratitis, and scrofuloderma. The theory of constitution in tuberculosis had persisted after Koch's discovery in the changed form of a hereditary predisposition or tendency, but even so, it had steadily receded, and the recent investigations of Bernard (showing that the children of tuberculous parents, if protected from infection, did not contract the disease and were fully up to the average in health and vigour) had supplied further important evidence against it. The idea of a scrofulous constitution, however, still survived, especially in Germany, in connexion with certain types of tuberculosis in childhood, gland and bone tuberculosis, and those obstinate relapsing catarrhs of the eyes called scrofulous and strumous. It was taught (Heubner, Czerny, Escherich, Moro) that in such cases tuberculous infection was associated with the abnormal constitution, lymphatism, or status lymphaticus, and that in them the tuberculin reactions were unusually severe. Dr. McNeil showed slides illustrating the stigmata of the scrofulous child, the occurrence of severe tuberculin reactions in scrofulous conjunctivitis, and the morbid anatomy of status lymphaticus. Thyroid hyperplasia, he said, accompanied the lymphoid hyperplasia in status lymphaticus, and might be regarded as an essential part of its morbid anatomy; if this were established, the morbid anatomy of status lymphaticus in the child was identical with that of exophthalmic goitre in the adult. These facts, he thought, supplied some anatomical evidence of abnormal constitution in certain cases of tuberculosis in childhood. But this abnormal constitution was independent of tuberculous infection, since it was also found along with, and probably explained, certain rare fulminant types of many other infections in childhood, such as pneumonia, scarlet fever, measles, and chicken-pox. The abnormal constitution in the child which was termed status lymphaticus might be the counterpart of exophthalmic goitre in the adult, both being dependent upon some unknown disorder of general metabolism; but whether this was so or not there was no evidence for the very ancient doctrine of an abnormal constitution (or diathesis) peculiar to tuberculosis. If the old word scrofula were to be retained in medicine it should only signify glandular tuberculosis, which was a definite and important phase of tuberculous infection in childhood, and it should not imply any idea of constitution.

Dr. J. V. PATERSON spoke on the subject of scrofula and strumous keratitis. This condition of the eyes, he said, was commoner amongst our ancestors. At present it was only seen in hospital practice and never in private. It undoubtedly had a close relationship to tuberculosis. No other treatment was necessary than hygiene and good dieting. Treatment in the dark was now a thing of the past. It should be classed as a preventable disease.

Dr. ALEXANDER JAMES read a paper on

### *Scarlatina, Diphtheria, and Measles*

in their relations and inter-relations, from the medico-sociological standpoint. The effects of an infectious disease, he said, were governed first by its own virulence, and, secondly, by the constitutional strength of the individual, hereditary or acquired. He described the results of an investigation designed to ascertain whether strength and fitness to resist one infectious disease applied to other infectious diseases. For the purpose 918 cases were collected of scarlet fever, 610 of diphtheria, 238 of measles, and 111 of diphtheria carriers, all of them over 6 years of age. In addition the infectious diseases were studied in 1000 school-children. The results were tabulated as shown. (Previous illnesses are shown on the left; thus 75 per cent. of scarlet fever patients had previously had measles, 50 per cent. had had whooping-cough, and so on.)

Study of the table, said Dr. James, showed that the proportion of those who had had no previous infectious disease was high in measles and low in diphtheria. Taking into consideration the fact that measles was a very common disease, this seemed to show that those who could ward off measles could ward off other diseases better than their neighbours. To study constitutional fitness the cases were divided according to their severity into two groups, and the number of previous infectious diseases was found for each group. Of 918 cases of scarlet fever 877 were mild or moderate, and 41 severe or fatal. In the former group the percentage of previous infectious diseases was 1·73; in the latter it was 2·12. Further, in the latter group there was not one case that had not had previous infectious disease. Other diseases showed similar results. Certain individuals, moreover, showed a particular susceptibility. For instance, a boy of 7 years admitted to hospital with measles, contracted successively diphtheria, scarlet fever, and chicken-pox, whilst all the other patients in the wards he visited remained free.

| — | Scarlet fever. | Diphtheria. | Measles | Diph. carriers. | School-children |
|---|---|---|---|---|---|
| | % | % | % | % | % |
| Measles .. .. | 75 | 80 | 7·0 | 85 | 60 |
| Whooping-cough | 50 | 50 | 40 | 57 | 62 |
| Chicken pox .. | 15 | 35 | 30 | 31 | 42 |
| Mumps .. .. | 2·1 | 8·9 | 16·3 | 16·1 | 11 |
| Scarlet fever .. | 3·2 | 6·7 | 12·6 | 29 | 5 |
| Diphtheria .. | 4·2 | 6·0 | 3·7 | 11 | 6 |
| No previous disease | 13 | 8·3 | 25 | 8 | 15 |

Dr. D. WEBSTER, Dr. R. A. FLEMING, and Dr. ALEX. GOODALL took part in the discussion following Dr. JAMES's paper.

# Reviews and Notices of Books.

## THE ESSENTIALS OF MENTAL MEASUREMENT.

Third edition. By WILLIAM BROWN, M.D. Oxf., D.Sc., M.R.C.P. Lond., Wilde Reader in Mental Philosophy in the University of Oxford; Psychotherapist and Lecturer on Psychotherapy, King's College Hospital, London; and GODFREY H. THOMSON, D.Sc. Dunelm, Ph.D. Strasburg, Professor of Education, Armstrong College, Newcastle-upon-Tyne; Visiting Professor, Columbia University, New York, 1923–24. Cambridge University Press. 1925. Pp. 224. 17*s.* 6*d.*

THE chief alteration from the last edition of this book is the addition of a chapter summarising the present position of the controversy over the theories of general and special abilities. Fortunately, there are signs that the protagonists in this struggle are not quite so far apart as they appeared to be before, though some points of difference still remain. The existence of general ability—in the sense that a man who is good at one kind of mental work is usually above the average in others—is a fact which has always been accepted by both sides. The controversy arose over two different ways of explaining this fact. By Spearman's theory a general factor $g$ has a part in all our activities, hence the correlation between achievements in unlike performances. Each achievement is completely determined by the general factor and another factor specific to the activity in question. Thomson's sampling theory assumes that each activity is a sample of many factors, and correlations are caused by overlapping group factors common to several activities. Each side acknowledges the possibility of the rival theory in some cases.

The most acute point of difference was the validity of Spearman's criterion for "hierarchical order" (as a sign of the existence of $g$) among correlation coefficients. This criterion has now been replaced by another which appears to be more acceptable, but comprehensive tests by the new criterion have not as yet been published. A controversial point still held by Thomson is his argument that, philosophically and mathematically, the differences between really different correlation coefficients are of the same nature as fluctuations of sampling in truly equal correlation coefficients "for the variates are differing samples of the underlying elements." Hence *he believes* that a considerable degree of hierarchical order is natural among all sets of positive correlation coefficients—not among psychological measures alone. Here, again, the appeal to experience on a decisive scale has not yet been made. For those who are not familiar with the earlier editions of this book, we may say that it deals to some extent with methods of experimenting to obtain measurements of psychical processes, but to a larger extent with the methods of calculation applied to such data. The title would lead one to expect that the relative share of *attention* would have been reversed. In fact, the general impression given by the book is that the chief need of the science of psychology is to aim at improved methods of experimenting, and thus lessen the need for subsequent statistical treatment. The ordinary statistical methods are clearly but shortly described, and the book is to be recommended to psychologists as paying more attention than is often found in psychological text-books to the exact methods of the biometrical school and rather less to short-cut approximations. One short cut omitted might with advantage have been included—Pearson's $Q_2$ coefficient for a fourfold table. It has not the theoretical basis of his tetrachoric $r$, but in practice agrees well with it and is considerably quicker to calculate. The discussion of index correlation tacitly makes the common but, to say the least, debatable assumption that it is always the correlation of the ratios that is "spurious" for the object in view, and never the correlation of the elements. In the example of fitting a normal curve, on page 43, a hint might be given to beginners that *areas* are needed to compare with frequencies; not till page 78 are areas compared. The warning note on page 43 against curve fitting to only 29 observations might be repeated with even more force against using the "Goodness of Fit" test with cell numbers of the size found on page 79. These are only minor points in a book that, if somewhat too controversial in parts, is, nevertheless, of proved value.

## THE PHYSICIAN AND THE PUBLIC.

By LEONARD L. LANDIS, M.D., Chairman of the American Association of Independent Physicians, &c. Published by the Association. Pp. 349.

THE present-day code of medical ethics has, especially of late and in this country, been severely called in question, but it has on most occasions been arraigned only by members of the public when it has been described usually in quite fanciful terms. It is interesting to find that in America a medical man has decided "to break through the barriers of lifeless medical tradition and decaying dogma" and to advocate publicity as the greatest need of the profession; American doctors are encouraged to advertise directly to the public to secure practice, on the basis that "no advertising can be permanently successful which does not tell the truth." If such a doctrine exists beyond the Atlantic there must be many in America who ascribe to the *advertisement* columns of their papers an accuracy which is undeserved, while losing count of enormous fortunes made by exploitation. Dr. Landis considers that for the doctor direct advertisement is the only alternative to the methods of indirect advertising that the present code either allows or is powerless to prevent; such methods he reviews as ranging from "industriously getting a footing in the homes of wealthy or influential members of the community" to "an understanding with a janitor or local druggist" to recommend a practitioner.

It is hardly necessary to point out the fatal objections to direct advertising of any sort by professional men; they are all based on the fact that the appeal would be made to a public which could not criticise its veracity. Change of professional methods in the suggested direction would bring with it a new class of personality into the profession. Under the conditions of publicity which Dr. Landis enthusiastically visualises, the medical man, who based his professional work on the evolving principles of medicine, would no longer be able to keep his position in competition with an ever-increasing list of "best sellers." We do not think that among well-educated and progressive practitioners Dr. Landis's views will find much acceptation.

ROCKEFELLER INSTITUTE.

Studies from the Rockefeller Institute for Medical Research. Reprints, Vol. LV. 1926. Pp. 599.

THE results of investigations conducted at the Rockefeller Institute in New York or elsewhere under its auspices are first published in various journals. From time to time they are reprinted in volumes, of which this is the fifty-fifth, paged consecutively and indexed. Such collections form a record, in this case a very fine one, of an institution's activities, and they give a vague memory another chance of finding some paper by a forgotten author with a mislaid title. Otherwise they are not very useful, and in many ways workers in other places are better served by an annual summary of what has been done which enables fresh work to be placed in relation to what has gone before, which cannot be done by unannotated reprints of the complete originals; the Rothamsted Experimental Station and the Lister Institute issue such a digest each year in a convenient form. The papers in the present volume cover a wide range and their classification in the table of contents is not very helpful.

## JOURNALS.

BRITISH JOURNAL OF SURGERY.—The April number contains Sir D'Arcy Power's twentieth eponym on Thomas's hip splint, continued from last time.—R. M. Handfield-Jones gives a full description of the occurrence of chorionic carcinoma in the testicle, reports a fresh case, and brings the number of reported cases up to date.—E. D'Arcy McCrea reviews the anatomy and the physiology of the nerves of the stomach; he has investigated the results of nerve section on the tone and function of the organ, and he suggests that certain morbid conditions of the stomach may be treated with some success by this method in the future.—R. Campbell Begg reports a case of a solitary cyst of the kidney originating in a cavernous angeioma.—From the biochemical department of the Middlesex Hospital there comes an interesting report of the reliability of the various methods of estimating renal efficiency as the result of experiments carried out by I. Cohen, E. C. Dodds, and C. H. Shorney Webb. They consider that the blood-urea test is not a safe one, and recommend that the estimation of the uric acid content and the non-protein nitrogen content of the blood be relied on in the future.—R. L. Stewart discusses primary tumours of the ureters with a report of a case.—L. R. Fifield and R. J. McNeill Love analyse 78 cases of subphrenic abscess occurring at the London Hospital.—G. Bell and K. Inglis record a case of a hæmangeioma of the leg extending from the ankle to the knee, invading bone and soft tissues, and being so large as to necessitate amputation.—P. Manson-Bahr and A. L. Gregg describe the surgical treatment of chronic bacillary dysentery by cæcostomy and drainage.—A. Campbell describes a new method of closing clefts of the hard palate by mucous flaps leaving no raw areas in the mouth.—C. Dukes presents a study of the simple and benign tumours of the large intestine, and suggests that there is sufficient evidence that the carcinoma of the large bowel arises in an adenoma.—A. W. Adams reports a case of solitary cyst of the humerus and reviews the literature and the treatment.—G. Hadfield discusses fat necrosis of the breast and records a case. The following rare or obscure cases are recorded. F. Harvey: A pedunculated thyroid tumour at the base of the tongue, arising from the region of the foramen cæcum. W. W. Galbraith: An appendix with a pin penetrating it and fixing it to the liver. A. Piney: A fibromatous tumour containing osteoclast-like cells growing in the subcutaneous tissues. A. Fullerton: Sarcoma of the ileum in a boy of 3 years associated with an intussusception. W. Tyson: Hypernephroma of the gall-bladder. J. Morley: Fusiform dilatation of the duodenum simulating hour-glass stomach. H. Burrows: Implantation cyst of the terminal phalanx of the thumb. W. Sampson Handley: Reducible hernia of a lipoma of the knee-joint. Sir James Berry: Large salivary calculus which had undergone spontaneous fracture with eburnation of the broken surfaces.—The fourth number of the Pathological Atlas contains 15 tumours of the jaws, comprising the myelomata, cysts, and the odontomes.

# Reports and Analytical Records.

## PERGONIN (ANTIGONORRHOICUM).

(PREPARED BY DR. BOTT AND CO., FRANKFORT-ON-MAIN, GERMANY.)

THIS preparation is a coffee-coloured liquid put up into phials, each containing 21·5 c.cm. It claims to be an isocarbocyclic silver compound. On analysis the following results were obtained:—

| | |
|---|---|
| Colloidal silver .. .. .. | 0·15 per cent. |
| Protein .. .. .. .. | 0·41 " |
| Combined phenol .. .. .. | 3·00 " |
| Reaction .. .. .. .. | Neutral. |

Although the liquid had the odour of phenol this compound was not present in the free state, but on distillation the quantity mentioned above was found.

Pergonin appears to be colloidal silver in loose combination with protein and a substitution derivative of phenol. For use the contents of one phial are diluted with 6·5 oz. of 3 per cent. solution of sodium chloride, ½ oz. being used for each injection. Considerable claims are made for pergonin as being successful in the treatment of gonorrhœa.

## (1) EMULSION OF METAGEN AND COD-LIVER OIL; (2) BISMUTH SALICYLATE IN OIL.

(PARKE, DAVIS, AND CO., 50–54, BEAK-STREET, LONDON, W. 1.)

The first of these products is designed to supplement the well-known nutritive qualities of cod-liver oil with the other accessory food factors. Metagen is a physiologically tested preparation of vitamins of vegetable origin and emulsification is effected by employing fresh eggs which enhance still further the nutritive value. Its use is suggested for adults suffering from disorders of nutrition and for infants where it is desired to promote calcification of the bones, or delayed eruption of teeth, or to prevent the onset of rickets. Each fluid ounce of the product (28·5 c.cm.) contains 10 gr. (0·65 g.) of metagen and 200 minims (12 c.cm.) of the finest Norwegian cod-liver oil. The flavour is not unpalatable. The dose for adults is one tablespoonful, and for children one to three teaspoonfuls, three times a day after meals.

Bismuth salicylate in oil consists of the chemically pure salt in very fine powder, suspended in olive oil to which has been added 10 per cent. of camphor and creosote, with the view of preventing pain and irritation at the site of injection. As a spirochæticide the suspension may be given intramuscularly in all stages of syphilis, particularly those in which adequate doses of mercury or arsenic cannot be tolerated or where the spirochætes have acquired a tolerance for other drugs. The preparation is put up in boxes of six ampoules, each containing 2 gr. (0·13 g.) of bismuth salicylate in 17 minims (1 c.cm.) of oil. The size of the dose and the duration of treatment vary with the severity of the disease; 12–15 injections constitute the usual course. Patients should be directed to drink water freely while under bismuth treatment. Overdosage may produce symptoms similar to those of mercury overdosage.

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or damage are already illegal. When offences of this kind are committed by large and disorderly crowds in the temporary absence of sufficient police officers, it is the enforcement of the law, not the interpretation of it, which is the difficulty. Stone-throwing, assaults on drivers, overturning cars and setting fire to them are not more innocent because they occur during a strike; if anything, they are more criminal. The privilege of peaceful picketing does not extend to acts like these. The Trade Disputes Act of 1906 does not excuse them. "The immunity afforded by the 1906 Act," says a recent legal text-*book*, "*must be strictly limited to peaceful picketing.* Watching and besetting or trespass or any other improper act is still unlawful . . . So also, apparently, a prosecution for obstruction under the Highways Acts will still lie." No doubt this statement of the position is correct. It will be found in "Industrial Law," the volume published in 1924 by Sir HENRY SLESSER, K.C., and Mr. ARTHUR HENDERSON.

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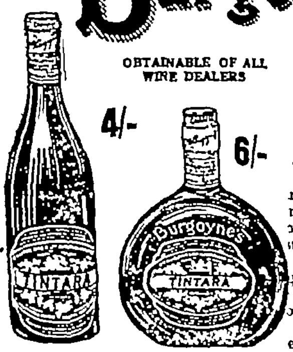

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## IMMUNISATION AGAINST MEASLES.

SOME weeks ago[1] we drew attention to the damage done by measles amongst children in poor homes and in institutions, and suggested that immunisation with the serum of convalescents, if it is really as effective as is claimed, would be a procedure of real usefulness in everyday practice. In the *Medical Officer* of April 10th Dr. LUDWIG HEKTOEN and Dr. B. R. LOVETT, of Chicago, give an interesting account of the uses and limitations of this kind of serum therapy. The results they quote may not justify all the statements born of enthusiasm for the method, but they certainly support our contention that there is a good case for trying it in this country. VON TORDAY, it is remarked, summarised the cases up to 1923, and found that out of 2000 there were less than 3 per cent. of failures—that is to say, of children on whom convalescent serum did not confer protection. At the Durand Hospital, Chicago, of 57 susceptible children exposed to infection the nine who were not treated all developed measles, but of the 48 who were given serum only four became sick, and three of these had received it too late to get adequate protection. Convalescent serum is prepared at the Durand Hospital by taking 6 to 10 oz. of blood from the vein of an adult or older child after the temperature has been normal for four days following measles. After Wassermann tests and cultures to ensure sterility, the serums from several persons are mixed, 0·25 per cent. *of tricresol is added for preservation*, and the serum is sealed in 5 c.cm. vials. These are kept on ice and the immune substances remain potent for six months or more. Naturally, it is not always easy to get a large supply of this serum, and whole blood from a member of the family who has had measles may be used instead. Whole blood has to be given in greater quantity, and if an adult has not had measles since infancy a rather large amount of his blood is needed to confer passive immunity on a susceptible child. VON TORDAY gave 20 c.cm. of blood drawn from older children or adults to 116 children on days from the second to the sixth after exposure. Twelve developed modified measles, the rest were protected, and none had a typical attack. The results of immunising with whole blood are said to be less certain than when serum is used, but, in the opinion of HEKTOEN and LOVETT, the method is valuable because it is so easily carried out in private practice when no prepared serum is available. As we have already pointed out, the passive immunity produced by early injection of serum, although convenient in certain circumstances, only lasts a few months. Its use corresponds exactly to the administration of diphtheria antitoxin for prophylactic purposes in institutions during epidemics. If, however, the attack is not prevented entirely and is only modified, the result is said to be permanent immunity at the expense of a mild illness. HEKTOEN and LOVETT say that it is not easy to arrange matters so that this slight attack is sure to occur, but it is clearly a satisfactory thing to bring off.

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[1] THE LANCET, March 27th, p. 668.

To show the proper dosage for modified or full protection they quote a table from ZINGHER as follows:—

| | Days after exposure. | | |
|---|---|---|---|
| *For complete protection:* .. | 1–4 | 5–6 | 7–8 |
| Convalescent serum .. | 2·5–3 c.cm. | 5 c.cm. | 7·5 c.cm. |
| Recently recovered serum .. | 5–6 | 7·5 | 10 |
| Immune adult's serum .. | 10 | 15 | 20 |
| *For modified attacks:* | 1–5 | | 5–10 |
| Convalescent serum .. | 1·5 c.cm. | | 2·5 c.cm. |
| Recently recovered serum .. | 2·5 | | 5 |
| Immune adult's serum .. | 5 | | 10 |

These amounts are for serum; if whole blood is used the amount should be twice as great.

In concluding their paper they say:—

> The most rational procedure for children over 5 years old, who are in good condition and living in their own homes, is to produce a modified attack if possible. In children's hospitals and institutions, where it is important to stop the outbreak of measles as soon as possible, injections of serum should be early and adequate to prevent entirely. Children under 5 years old and those who have recently suffered from other diseases, especially tuberculous children, should also be protected from the attack of measles.

It is not, of course, convenient that human blood should be used for the supply of immune serum, and any great success in eliminating the disease might lead to a shortage of convalescents from whom it could be got. The question arises, therefore, whether it would not be possible to secure a supply from animals. To do this it is necessary to provoke an active immunity in the animals concerned, which is only done conveniently when the virus can be handled and modified. Dr. RUTH TUNNICLIFF, of Chicago, has isolated, from cases of measles, a Gram-positive green-producing diplococcus which, on being injected into goats, raises their immunity so much that their serum (it is said) protects human beings as efficiently as does the serum of convalescents. She considers, however, that the experiment has not been done often enough to justify any definite conclusions as yet. More recently a report has been published in the *Journal of the American Medical Association* (March 27th, 1926), by Dr. N. S. FERRY and Mr. L. W. FISHER, who report the isolation of a streptococcus of the *viridans* type from the blood of measles patients. To this organism they have given the singular name of *Streptococcus morbilli*, and they claim that it produces a toxin which gives for measles all the reactions which the Dick toxin gives for scarlet fever and which are generally considered weighty evidence in favour of streptococci being of ætiological importance in the latter disease. As there are now at least two streptococcal claimants for the causal rôle in measles, judgment must be deferred until more extended observations have been made and further reports received. Other interesting work has, of course, been done along quite different lines. In 1915 HERMAN,[1] taking advantage of the fact that infants do not contract measles until they are a few months old, inoculated their throats with material from the nose of infectious patients and reported that they were fully and harmlessly protected. HEKTOEN and LOVETT, however, regard such methods as largely discredited. The production of active immunity, as they remark, is still in the experimental stage, but this is evidently a stage of promise.

## MEDICAL BENEVOLENCE.

THE last report of the committee of management of the Royal Medical Benevolent Fund shows, as well as an increase in new subscriptions, some substantial legacies—Sir RICKMAN GODLEE, for example, has bequeathed a contingent legacy of £5000, while the will of Dr. M. G. EVANS has benefited the institution to the extent of over £3000. There were many special donations, among which may be noted the sums of £1000 from Dr. WILLIAM TINKER, of 500 guineas from the Medical Insurance Agency, and of £50 from a subscriber whose admirable attitude may be quoted, as it appears in the report; his donation was based on two guineas for every year he had practised, a covering letter containing the following words: "I have a very guilty conscience for not having supported the most excellent Fund." We have a feeling that other consciences may be aroused by this piece of intelligent generosity. The income of the Fund, derived from subscriptions and donations and from invested property, has gone up during the year and the amount expended in grants has risen proportionately. Altogether 559 persons have been relieved by grants and annuities. The report was noted in detail in our issue of May 1st (p. 927), and those who read it will observe that this tale of prosperity is a sorely qualified one. Progress is reported, but it is a progress that does not even keep pace with the demands upon medical benevolence, still less does it enable the formation of any great scheme for assistance by way of education to the young dependents professionally connected with all of us. And that is the ideal to which attention should be directed.

The rising sense of responsibility which the medical profession as a whole is feeling towards those of their colleagues on whom fate, for one reason or another, has pressed hardly, was sensed last year in an instruction given by the Representative Body of the British Medical Association to the Council of the Association to the effect that a Charities Committee should be constituted by the Association with the duty to direct the attention of the members to the financial and educational hardships which arise as a result of misfortune through ill-health or through premature death. The object of the Committee will be to appeal for contributions to meet those hardships, and the Council in office will act as trustees for any fund that results, while grants from the fund will be allotted either to such medical benevolent organisations as the Charities Committee may deem advisable or in any directions that individual donors may select. The scheme is bound to be of great benefit to the existing charities, and will be, further, a form of that coöperation of activities which it has so often been pointed out in these columns is the only way to secure both massed opportunities for relieving distress and due powers of discretion in the bestowal of assistance. Such coöperation has already resulted in substantial good in educational directions, for the Medical Insurance Agency, started as a joint movement by the *British Medical Journal* and THE LANCET, and noted above as a fine friend to the Benevolent Fund, has now become one of the most substantial and regular benefactors of Epsom College, which (as may be seen from the brief report on a later page) is the great example of medical benevolence applied to the upbringing of the children of doctors.

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[1] In a recent article this work was inadvertently ascribed to Morey, whose name does not appear elsewhere in the literature of the subject.

The Benevolent Fund and Epsom College, having the common purpose of alleviating misfortune in the medical profession, are directed the one towards the later and the other towards the earlier conditions of particular need. Pensions and grants from the Fund make easier the lives of those who can no longer work, or of their dependents for whom they have been unable to make adequate provision. No appeal to the more fortunate in the medical constituency can be more moving, and it is the great desire of those who have for long supported the Fund that the regular disbursements should be upon a more liberal scale. The sad stories narrated month by month in the medical journals indicate the fundamental necessities which have to be met, and no doubt the small allotments which the Fund can make count for a large increase in the security and happiness of the recipients. But with the purchasing power of money what it is to-day, the stewards of the Fund feel that the payments ought to be on a higher scale, and we trust that they may receive many more annual subscriptions towards the accomplishment of their purpose. The supporters of the Epsom Foundation, though they too dispense certain pensions, have before them mainly the great ideal that the children of the less fortunate medical men should not be deprived of the equipment for life which it had been designed that they should receive. No greater relief can be given to anxious parents, whether living and over-burdened with care or widows with slender resources, than to feel that their children will obtain those early opportunities for making a career which it is the prime object of self-respecting families to provide for their offspring. We recommend, therefore, with equal urgency the Fund and the College to the notice of all the medical profession, though it will be fitting here to add a word of warning to intending testators. These two admirable institutions contain in their full official titles adjectives common to both, and before now it has required the costly intervention of the law to decide by interpretation of the phraseology which of them a will was intended to benefit. The two institutions are properly supplementary to each other, and benefactors should be careful not to force them into apparent opposition by confused expressions of their intentions.

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# A DEFINITION OF BLINDNESS.

A REPORT on blindness in Glasgow has recently been published with an introduction by Dr. A. S. M. Macgregor, the medical officer of health. The statistical inquiry into the causes of loss of vision among the adult blind was undertaken by Dr. A. Freeland Fergus and Dr. J. L. Halliday, but unfortunately its utility is to a great extent marred by the entire absence of any mention of the standard of blindness concerned. Thus measles was found to be responsible for 35 cases of blindness—that is, 2·9 per cent. of the total number. "Measles," to quote the report, "as a cause of blindness acts mainly by producing ulceration of the cornea. In the severer cases it may cause complete destruction of the eye." Now corneal ulceration, and especially the phlyctenular ulceration that is a common sequela of measles, is a not uncommon cause of defective vision, but the standard of blindness would have to be a fairly liberal one before many were included who owed their disability to this cause alone. At any rate, this would be the case in London, and cases of panophthalmitis following measles, though they do occur, are so rare that we should be surprised to find that the percentage rate was materially affected from this cause. Similarly one is in the dark as to what degree of blindness affected the 38 cases of extreme myopia and the five of extreme hypermetropia. If by "blindness" is meant "too blind to carry on their usual occupation" this should have been stated, but in default of some agreement as to the amount of vision necessary in various occupations such statistics would be of little value. To take a definite standard of visual acuity is a more hopeful method, and in an examination of adults there is no excuse for omitting this, but in estimating blindness it is not in itself sufficient, for cases of diminished fields of vision such as occur in glaucoma or retinitis pigmentosa may cause a disabling degree of blindness even while retaining comparatively good central vision.

This matter is one of considerable practical importance. Under the Blind Persons Act a considerable amount of public money is now being expended in subsidising the training of the blind, in supplementing their earnings, and in granting them old age pensions ten years earlier than the rest of the population. By the Act of 1920 blindness was defined to include persons "so blind as to be unable to perform any work for which eyesight is essential." For the purpose of interpreting this definition the Ministry of Health are now demanding somewhat detailed particulars of the blindness of applicants for the nation's bounty, and there seems to be good reason why they should do so. Their "Circular 681," recently issued, quotes from the report of the Section of Ophthalmology of the Royal Society of Medicine, issued in 1915, as follows:—

> "Experience shows that persons whose acuity of vision (refractive error being corrected) is below one-twentieth of the normal (3/60 Snellen) are usually unable to perform work requiring eyesight, while persons with vision better than one-tenth (6/60 Snellen) are usually able to perform some such work. Persons with intermediate degrees may or may not be able; much depends on intelligence and bodily strength, and much on the nature of the blindness.
>
> "A person whose so-called blindness depends on defects in the centre of the visual field may fail to reach a given standard, and yet be able to perform some kinds of work requiring eyesight, while another person suffering from great contraction of the field of vision may surpass the same standard and yet be unable to walk alone, or to do any kind of work requiring eyesight."

Having regard to this considered statement the circular intimates that any person whose visual acuity with correcting glasses is greater than 6/60 cannot be considered blind within the meaning of the Act unless the defect of eyesight includes such special conditions as a great contraction of the field of vision. The definition so arrived at is more stringent than that given in the Education Act of 1921, for the purposes of which Act a blind child is one who is "too blind to be able to read the ordinary school books used by children"; but, as the circular remarks, there is nothing to preclude the provision under the regulations of the Board of Education of facilities for the training of the partially blind. Indeed, an extension of such facilities is urgently required, especially in the interest of a large number of high myopes. For the selection and training of those who are likely to be qualified for Government assistance under the Blind Persons Act the approximate definition of what we may term industrial blindness will be of great help. There is still no hard-and-fast line, but in laying it down that anyone possessing a visual acuity of 6/60 is not considered blind unless suffering from further disabilities such as contracted field, the Ministry cannot be considered unfair. The circular should be at once an assistance to those who are responsible for the selection of cases suitable for admission to institutes for the education and training of the blind, and a spur to those education authorities who have not yet realised the necessity of providing special training of a different sort for the partially blind.

# Annotations.

"Ne quid nimis."

## ECONOMIC BIOLOGY.

THE heavy financial cost of some antimalarial engineering undertakings and their failure to reduce malaria have warned medical men to be cautious in advice—sometimes warned them off advice altogether—on this matter. A recent book[1] does excellently in equipping medical advisers to meet their difficulties with greater confidence. Mr. Home notes that the failure of the French company to excavate the Panama Canal is one example only of the political and economic results due to malaria. Gorgas stated that the company lost 22,000 men in their attempt. The engineer is principally concerned with the economic side of the matter (and, we would add, the medical man ignores this side at the peril of his reputation). When labour is temporarily resident in a district—e.g., for railway construction or irrigation works, if the cost of provisional measures, such as oiling, temporary drainage, screening of quarters, plus their upkeep during execution of works, equal the estimated loss due to sickness, it pays financially. Where labour is resident the estimated loss due to sickness must be equal to the interest and sinking fund charges on the cost of permanent antimalarial works, plus cost of efficient upkeep, to pay financially. If the cost of the latter be greater than the former the malarial conditions are too serious to be tackled economically. Antimalarial works are really contingent expenses to works carried out by administration and part of the works' cost in a contract. In the Panama Canal antimalarial works have cost 5½ per cent. of the construction cost, and it is improbable that the large body of white and black labour could have been kept together without such expenditure. In the tropics railway and road construction is often responsible for increasing malaria. Culverts are sometimes placed too high completely to drain off water from the upside stream. In level country the bank, owing to insufficient number or water area in culverts or bridges, sometimes acts as a dam, holding up the cross drainage, and so on. The engineer responsible should give special attention to the drainage within two miles of inhabited places, ample water area being allowed for quick discharge in sections which threaten to hold up water. In populated districts antimalarial work should be regarded as a health measure benefiting the whole district, and be mainly financed and maintained as such, disregarding possible benefits to individual properties or undertakings.

In the indispensable preparatory work of antimalarial schemes it is for the entomologist to find out and chart the occurrence of different species of mosquitoes in the district, bearing in mind that while anophelines include all the species capable of transmitting malaria, some of the species in this group are not dangerous in this respect. The medical officer must discover definitely which species are the local vectors of the malarial parasite; for malarial surveys have disclosed important and unexpected facts. Thus, in Bombay, malaria did not arise from swamps around the city; the vector was *A. stephensi*, breeding in the wells of private houses. In the Andamans *A. ludlowi*, from the brackish creeks, is the vector, and the mosquitoes from the rice-fields are innocuous. In Mauritius it was found that all works' plans, 1908–22, had been based on the assumption that the only important malaria vector was *A. costalis*; further research revealed *A. funestus* to be an equally, if not more, important vector, and under certain conditions anti-*costalis* measures favour the breeding of *funestus*. One of the most dangerous malaria carriers of the Malay Peninsula is actually attracted to waters opened up by removal of forest. Anopheline breeding-places may be dealt with by (1) destroying all actual or potential breeding-places of all anopheles; this requires little preliminary investigation, but is often costly. (2) Destroying only the actual or potential breeding-places of those species proved to be dangerous in the district; this requires extensive preliminary investigation, but is less costly. It is not easy, however, to ascertain which are the local vectors and what are their breeding habits. The methods of identification of anopheles of lowland and hill drainage, of antimalarial services, and the biological means of attack are all dealt with clearly and informingly illustrated in the book before us, which, although primarily intended for the engineer, should be read with equal care by the medical officer in the tropics; its place is beside Alcock's Entomology. Mr. Home's experience on the Central American coast, the West Indies, West Coast of Africa, Egypt, and Syria would by itself command attention; but there is more to it than that; he is in love with his subject so much as to have led him to acquire, and expound, accurate knowledge of biological matters outside of engineering, yet bearing directly and importantly on the antimalarial engineering. He has thus gone, possibly unwittingly, half way to meet his colleague, the medical sanitarian, with whom he can talk in the gate of economic biology. Now it is the turn of the medical sanitarian to talk economic engineering with the engineer. So far as malarial problems be concerned this book will enable the doctor to do so, for it provides the necessary information concisely and attractively set forth. Lieut.-Colonel W. P. MacArthur contributes an enlightening chapter on mosquito netting; this most important means of individual prophylaxis is too often neglected for the doubtful practice of daily quinine taking, and to judge from their writings the authorities on malaria prevention know little of the mosquito net. In hot climates netting should not be finer than is necessary; the author's experiments and observations show that a net mesh 25 to 26 holes per square inch woven of 40/60 or 30's cotton will exclude mosquitoes. This is a welcome pronouncement, for nearly all have thought a far finer mesh to be necessary. Dr. P. A. Buxton gives a chapter on applied entomology, and there is one dealing with the pH values of water as they affect the contained fauna and flora. Mr. Home deserves congratulation on having produced a volume which has long been needed, for though most of the facts here recorded have already been published by many workers in different journals and official reports, they are here brought all together, well illustrated, and their inter-relations and varying significance clearly indicated.

## HIGH PROTEIN DIETS AND RENAL INSUFFICIENCY.

THE combination of hyperpiesis with renal insufficiency is so common in clinical practice, and the treatment of the condition remains so unsatisfactory that all experimental work on the subject is of interest. Retention of nitrogenous products in the blood, as shown by an excess of urea, non-protein nitrogen, and creatinin is a commonly occurring feature in such disease, and the logical therapeutic deduction from such findings is to place their subjects on a diet containing as small a proportion of protein as is possible. Unfortunately, clinical experience is far from giving its blessing to this procedure; results are disappointing. The diabetic, with hyperglycæmia, responds immediately to an adjustment of his diet, the nephritic does not. No solution to the problem is yet forthcoming, but some suggestive experimental work is in progress. Amongst such work may be quoted that of H. Anderson at the University of Minnesota Medical School. This observer has repeated and elaborated[1] the classical experiments of Rose Bradford, by removing a portion of one kidney in animals and, at a subsequent operation, removing the whole of the second kidney. Confirming Bradford's work, he finds that death is always produced rapidly in rabbits if more than 70 per cent. of the total kidney substance is removed. If, however, amounts varying from 62–68 per cent. are removed, the animals survive for a considerable time, a large proportion dying of renal failure in a few months, the remainder surviving indefinitely, the deciding factor between death and survival being whether the remaining portion of kidney hypertrophies and escapes infection, or whether infarction, pyelitis, or calculus occurs (probably as an accidental result of operative interference), and produces progressive disease in the fragment. On these animals with renal insufficiency Anderson has made many interesting observations. Analysis of the blood showed constant and considerable increase in the nitrogenous constituents, notably in the urea and creatinin, whilst urinary analysis showed albuminuria in most cases with a constant diminution in the power of the kidney to eliminate a concentrated urine. Observations on the blood pressure, on the other hand, yielded surprising results. In no case was there any appreciable increase in the arterial tension, nor were changes in the fundus oculi discovered. These results were given both by those animals kept on a normal diet and by a special group fed with a diet particularly rich in protein. It was found that in all animals observed, whether with normal or with defective kidneys, high protein diet caused renal hypertrophy, but there was no evidence that the diet had any harmful effect on the partially nephrectomised animals beyond accentuating the nitrogen retention in the blood. Arterio-sclerosis was certainly seen in the aorta of the animals taking the increased protein, but this change did not extend to any of the smaller arteries, nor was it the result of the impaired renal function, for it occurred equally markedly in those rabbits whose kidneys were normal.

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[1] The Engineer and the Prevention of Malaria. By Henry Home, M.Inst.C.E. London: Chapman and Hall, Ltd. 1926. Pp. 176. 13s. 6d.

[1] H. Anderson: Arch. Int. Med., 1926, xxxvii., 297.

## OSSIFICATION OF THE HYOID APPARATUS.

THE development of radiography has transferred several abnormal bony conditions from the note-book of the anatomist to the hands of the surgeon. First described as an anatomical peculiarity by Geoffroy-St. Hilaire in 1818, ossification of the stylohyoid ligaments has been studied as a clinical problem by von Eicken and Olivier. Dr. Adrien Harburger has recently said all there is at present to say about this interesting subject, basing his observations on 40 cases.[1] The symptom-complex produced by this abnormal slip of bone in the throat is a vicious circle of painful dysphagia and reflex increased salivation calling for repeated deglutition. The typical case is a woman of about 30 who has consulted many physicians, without avail, for an increasing difficulty in swallowing. She has noticed the steady development of a sharp pain in the throat, usually on the left side, aggravated by the passage of any food, especially solids. She has a scraping sensation in the pharynx, which feels as if a sharp point were piercing it at a spot which she can localise accurately. Sometimes the pain passes up to the ear and causes a little deafness. She may come into the consulting room dribbling the excessive saliva which dread of pain forbids her to swallow. When she speaks a certain mechanical dysphonia may be observed on the high notes. She will probably be able to point out a reddened and tender rod of bone across the tonsil or one of its pillars, or a ridge in the back of the mouth or nasopharynx. The progress of the case is slow but steadily progressive, until the pain necessitates resection of the styloid process, which is invariably successful. As in the parallel condition of cervical rib, the ossification may be present without causing symptoms.

Out of 115 cases collected by Dr. Harburger, only 20 gave trouble, and the malformation was discovered by chance on removing a tonsil or on making a thorough examination for some other reason. He lays stress on the *necessity for palpating* the ossicle before making the diagnosis; to see the ridge is not enough. The anterior pillar, the tonsillar fossa, the posterior pillar, and the lateral wall of the pharynx should be palpated methodically from above downwards, and the size, direction, and transverse mobility of the bone carefully estimated. There is no problem of differential diagnosis when an X ray has been taken; this should be done in profile with the head extended and the beam centred on the angle of the jaw. Unless this is done there may be confusion with cases of cartilaginous nodules or calculi in the tonsil—found in 84 per cent. of normal cases, according to Dr. Harburger—or even with an isolated ceratohyal nodule or a calculus in Wharton's duct. Such nodules have no connexion with the cranium or the hyoid, and the resistance they offer is within the tonsil and not outside it. The operation for resection should be preceded by a tonsillectomy, as this is a palliative which occasionally cures the symptoms. It is inevitable if the resection is to be performed through the tonsillar fossa, a route which is often convenient. If the abnormal ossification is only discovered in the course of a tonsillectomy, it is simply exposed and cut off with strong scissors or a bone-cutter. Very often the tonsil adheres so tightly to the bone that it cannot be removed without it. If the operation is for removal of the bone alone the patient should be prepared as for a tonsillectomy and the anæsthetic for choice should be local. The ridge made by the bone is incised upon and the resection made as extensive as possible. With ordinary care there is no danger of touching either carotid at this level, but the resection must not be carried up the styloid process where the external carotid and cranial nerves lie close to the bone. With careful hæmostasis the operation should give no troublesome after-results. This condition is one of those uncommon abnormalities which are only recognised if they are always borne in mind, and laryngologists will be grateful to Dr. Harburger for his review.

## INSULIN IN VOMITING AND ECLAMPSIA.

A COMMENT on the treatment of excessive vomiting and eclampsia by means of insulin lately appeared in the *Journal of the American Medical Association* (Feb. 20th). After a brief review of the statistics of vomiting in pregnancy, the article refers to the work of Thalhimer who, it may be remembered, recommended the use of insulin and glucose in all conditions inducing acidosis, whether associated with diabetes mellitus or not. He has reported very *good results* by the application of this method of treatment to the toxæmia of pregnancy. The summary of his method is as follows: 1000 c.cm. of warm 10 per cent. glucose solution are injected intravenously at the rate of 200–300 per hour. A quarter of an hour after the injection has been commenced 10 units of insulin are given hypodermically. Similar doses of insulin are given throughout the injection until 30 units in all have been administered. Thalhimer has also used this method in eclampsia, and he states that it is particularly successful if there is ketosis. He does not recommend that this form of treatment should be used alone in cases of eclampsia, but suggests that some form of anti-eclamptic measures such as a Stroganoff treatment should be adopted as well.

In a later issue (March 27th) of the same journal Paul Titus, of Pittsburgh, strongly criticises this kind of treatment. He says that insulin should *not* be added to the glucose injections given for the vomiting of pregnancy and that "it seems positively dangerous in eclampsia," and quotes the opinion of the Toronto group as contained in the following statement from *Medicine* (August, 1924), by W. R. Campbell and J. J. R. Macleod:—

> "The use of insulin in pernicious vomiting in pregnancy is, in our opinion, unnecessary. No case of post-operative acidosis has required it, and it is difficult to see what purpose it could serve. Its use in non-ketonic acidoses is even more questionable, and, indeed, one may be permitted to doubt its value in conditions other than those in which there is a distinct deficiency of endogenous insulin production. There

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[1] La Vie Médicale, March 18th, 1926.

who insist on regarding all the ills the flesh is heir to as due to an indefinite endocrine unbalance will do well to pause before applying insulin recklessly. Insulin is a powerful drug. . . . Thalhimer suggested the use of insulin in addition to glucose to control the condition [vomiting of pregnancy] in severe cases. It is difficult to appreciate the use of the drug in this type of case. In Toronto no case of uncomplicated pernicious vomiting sufficiently severe to warrant the trial of insulin in addition to fluids and glucose has been encountered in the last two years."

From this it is evident that the use of insulin in toxæmia of pregnancy or eclampsia should certainly not be regarded as of proved value, and the same is true of its use in the malnutrition of infants in spite of satisfactory results summarised in the *Boston Medical and Surgical Journal* (April 8th).

## BACTERIAL INFECTION AND ACCIDENTAL HÆMORRHAGE.

AT a recent meeting of the Edinburgh Obstetrical Society Dr. F. J. Browne gave an account of some interesting experimental work carried out by him upon the ætiology of accidental hæmorrhage and placental infarction, which has already been reported briefly in our columns.[1] To recapitulate the gist of the statement there set out, Dr. Browne found that in many of the cases of accidental uterine hæmorrhage in the puerperium coming under his observation a history suggestive of chronic nephritis could be obtained. In endeavouring to reproduce the clinical conditions experimentally he induced a chronic nephritis in rabbits by continued poisoning with sodium oxalate, by the methods carried out and investigated by Shaw Dunn, Dible, Haworth, Jones, and McSwiney at Manchester. This procedure will set up a chronic tubular nephritis, whose incidence and course can be followed by renal functional tests, which ultimately proceeds to renal fibrosis. Dr. Browne found that if such animals were allowed to become pregnant, and during the pregnancy a further small dose of oxalate was administered—which has the effect of causing an exacerbation of the nephritis—and this was followed upon the next day by the intravenous injection of a small quantity of a saline suspension of *B. pyocyaneus*, the result in the eight cases in which the experiment was tried was the occurrence of uterine hæmorrhage with the production of placental infarcts. Further experiments showed that the bacterial factor alone was sometimes sufficient to produce this result in the presence of damaged kidneys, and that it was associated in such cases with an exacerbation of the nephritis as evidenced by a rise in the urea content of the blood. The general result which emerged from other experiments was that whenever uterine hæmorrhage in the gravid animal was successfully produced by any of the methods tried it was associated with an exacerbation of the nephritic condition, if previous chronic nephritis was present. It was also found that in non-nephritic animals the production of an acute nephritis sometimes sufficed to produce hæmorrhage.

The main outcome of these experiments, which are of great interest in connexion with the clinical problem, is to show the close relationship which may exist between the accidental hæmorrhage of the pregnant animal and toxic states. It is evident that the latter condition is the important factor and the mere means by which the kidney was damaged are of less significance, although for the purposes of experiment no doubt a certain technique will produce the grade of injury most likely to be associated with the hæmorrhage. An animal with existing renal insufficiency has no reserve excretory power, and any factor, intrinsic or extrinsic, causing further damage to the kidneys will increase the effects of the renal insufficiency—the toxæmia, to use a much abused word—whose existence is most conveniently demonstrated by the associated increased head of urea in the blood. Such additional damage might be caused in a variety of ways. Dr. Browne has employed, *inter alia*, injections of *B. pyocyaneus* and notes that the coliform group of organisms are especially potent in producing a positive result. The toxicity of this group for the rabbit and their especial tendency to produce renal lesions has long been recognised, and typical glomerulo-nephritis has been caused by their injection, both alone and in association with known toxic substances. We may assume, therefore, that the organisms in question in these experiments have acted chiefly as damaging agents upon an inefficient kidney and not in any specific way upon the uterus, and we do not, nor do we suppose does Dr. Browne, draw any inferences as to spontaneous infection, as such, being a factor in the production of this type of hæmorrhage in the human subject.

The suggestive work which we have outlined above raises the question once again, and in a more specific form, of the exact statistical relationship of albuminuria and renal insufficiency to accidental hæmorrhage, and the possibility of including at all events certain forms of this condition amongst the toxæmias of pregnancy. We are not aware of any extensive investigation of this matter, but no doubt the records of our maternity hospitals contain abundant information as to the former point and modern methods can quickly reply to the latter. In the meantime these extremely important experiments point out the necessity, nowadays fortunately well recognised, of the increasing surveillance of the pregnant woman and the careful examination of renal function in all cases in which a previous pregnancy has been associated with accidental hæmorrhage or where renal damage is known to coexist.

## ENDEMIC GOITRE IN NEW ZEALAND.

New Zealand is admittedly one of the healthiest countries in the world. It lies entirely within the temperate zone, and its climate is very nearly that deduced by Taylor and Huntington as the optimum for the human race. It has neither venomous animals nor disease-producing parasites; malaria and typhus are unknown, and its inhabitants maintain a high standard of sanitation and personal hygiene. It is curious that in a country so favoured endemic goitre should constitute a serious problem, and no less curious that so little should have been written and done about it. It was only after an absence of five years from his native soil of Canterbury that Dr. C. E. Hercus, of the University of Otago, realised the high incidence of goitre there, and determined to study its extent. He was assisted in this task by Dr. W. Noel Benson, professor of geology, and Mr. C. L. Carter, lecturer in chemistry. They extended their researches over the whole country, and have embodied their results in a thorough and attractively written monograph,[1] which will, it is to be hoped, stimulate and direct the efforts of the Government to solve an urgent problem. Besides being a distressing deformity, goitre is the brother of myxœdema and the father of cretinism. Previous figures of incidence, taken from recruiting and notification records, were deemed of little value, and Dr. Hercus started out in 1920 to determine the incidence of thyroid enlargement among the school-children of Canterbury and Westland. He combined the methods of inspection and palpation and found that readings taken by different observers varied by less than 5 per cent. The results were divided into five arbitrary categories similar to those of Marine and Kimball,[2] and the summarised results of the examination of 14,916 children were: normal, 39 per cent.; incipient enlargement, 29 per cent.; slight enlargement, 26 per cent.; medium enlargement, 5 per cent.; and massive enlargement, 1 per cent. The age-curve in girls rises sharply from 5 years to puberty (about 12) and bends, though still ascending, towards a maximum at 16, whence it falls. The boys' curve is much flatter and its highest, at puberty, is level with the girls' curve at 6–7. Fellenberg's[*] discovery of iodine in the menstrual blood suggests the reason why the deficiency persists in girls after puberty. 90 per cent. of the incipient enlargements occurred at the junction of the isthmus and the right lobe. In three cases only was the left lobe enlarged and the remainder of the gland normal. Thus the incidence of recognisable goitre among white New Zealand school-children reaches the remarkable figure of 32 per cent., though among Maori children for some unknown reason it is only 25–30 per cent. Dr. Hercus and his colleagues found that this incidence is roughly proportional to the average amount of iodine in the soil, and therefore to the amount present in the plant and animal food or the drinking-water of the population. Goitre does not necessarily go with mountains and limestone, nor is the comparative immunity of coastal districts due to air-borne iodine. The essential factor is the iodine in the soil. The New Zealand school medical service have, since 1923, been issuing free potassium iodide in 1 gr. pills (to be taken weekly) to all school-children in endemic areas. No child has yet shown any unfavourable symptoms from this very large dose—about 300 times the amount the gland requires. Nevertheless, there are serious objections to any scheme of prophylaxis that is confined to school-children. Endemic goitre is largely hereditary, and if the number of children of pre-school age whose thyroids are already enlarged is to be reduced, it is obvious that the important recipient of iodine is the pregnant mother. The authors hold that to restrict the supply of iodine solely to the school period is merely to trifle with the problem, and that the aim of the State should be to provide sufficient iodine for every inhabitant of a goitrous area for the whole of his life. They recommend the general use of table-salt containing 1/200,000 of potassium iodide, which is practically the *Vollsalz* used as a prophylactic in parts of Switzerland at a cost of not more than one-tenth of a penny a year for each inhabitant.

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[1] THE LANCET, April 17th, p. 814.

[1] Endemic Goitre in New Zealand and its Relation to the Soil-Iodine, Journal of Hygiene, xxiv., Nos. 3 and 4.

[2] The Prevention of Simple Goitre in Man, Jour. Lab. and Clin. Med., 1917, iii., 40–48.

## NATIONAL PHYSICAL LABORATORY.

THE report of the National Physical Laboratory summarises the activities of the institution during the past year. During this time a considerable amount of successful research has been done, whilst the fundamental work of the laboratory in maintaining standards of measurement has received due attention. The ever-increasing demand for the investigation of physical problems necessitates better accommodation for the Physics Department, and it is hoped that it may be possible in the near future to erect a building suitable for Physical Research. Of immediate interest to the medical profession are those sections of the report relating to radiology and sound. The Radiology Department has continued its working association with the X Ray and Radium Protection Committee which has entailed the inspection of over 70 different hospitals and a considerable number of X ray installations. Dr. G. W. C. Kaye states in his report that, although occasionally conditions are found which leave very much to be desired, a general trend of progress can be plainly discerned as the result of the Committee's recommendations. The year has been marked by an increase in the number of X ray protective materials and appliances submitted for test, among which have been complete sections of floors, walls, and ceilings of X ray departments. Barium plasters, which are often used as protective coverings for walls of X ray rooms, are found to possess poorer protective qualities at the voltages used for deep therapy than at those appropriate for radiography. A radiographic investigation of these plasters has been made and the results indicate that care should be taken to see that the barium plasters are correctly mixed and that they are applied to the walls of X ray rooms in thickness which allows a fair margin of safety. An important addition to the equipment of the Radiology Department is the apparatus for the ready oscillographic examination of the potential and current wave forms of high tension generators, such as are used in medical radiology. The importance of research on the output of these machines can hardly be over-estimated, and the results obtained with the new equipment will be awaited for with interest. The amount of radium tested during the year has shown a decrease, which, it is suggested, may be due to a smaller demand for radium in this country or to the testing facilities now available in Belgium. The usual method of radium measurement requires that the radium preparation shall be in radio-active equilibrium, which necessitates a period of five weeks between the sealing of the preparation and its measurement. To meet the consequent inconvenience which sometimes arises, the laboratory is now prepared to report on radium preparations before they have reached radio-active equilibrium. Further attention has been given to the development of sound pulse photography in connexion with the acoustics of buildings and some beautiful photographs obtained by this method are given in the report. The means adopted in this work is to photograph the sound generated by an electric spark excited within a model section of the auditorium, the characteristics of which are required. Valuable information about acoustics has thus been obtained. The ripple tank method of studying wave phenomena has been used to ascertain the characteristics of continuously excited water ripples with a view to finding out whether this method allows the determination by analogy of the behaviour of sound waves in similar circumstances. The results compare favourably with those obtained by the method of the electric spark, and they point to simplification in the study of problems in sound. A perusal of the report gives an idea of the variety of the problems dealt with at the National Physical Laboratory. The high standard of accuracy and precision which stamps all its work is a thing of which everyone responsible may be proud.

## MENTAL ANOREXIA.

IN the *Presse Médicale* of March 27th Dr. M. Nathan describes different varieties of what he terms *les anorexies mentales*. Accompanied, but not primarily caused, by digestive disturbances, anorexia occurs as a secondary symptom in the definite psychoses, but is more important as a primary condition, though Dr. Nathan declares that primary mental anorexia does not represent a homogeneous grouping and that too simple a conception of it may lead to disaster. Like most psychoneurotic symptoms, this one becomes, to the careful clinician, only part of a larger picture completed by other symptoms or even abnormal temperamental reactions. Dr. Nathan sketches the anorexia of the adolescent girl who becomes fearful of the approach of puberty; she recovers in 85 per cent. of cases if removed from home surroundings but tends to relapse when faced by later emotional situations. In another variety, exemplified by Breuer's classical case, the anorexia results from a displacement of affect and an emotional reaction that would be adequate to some past event is repeated when the patient attempts to eat or drink; here the psychic reaction is of the nature of anxiety, phobia, or compulsion. Sometimes the symptom represents what Freud calls "the flight into illness," when the patient opposes a strenuous resistance to that therapy which, if successful, would prevent escape from unpleasing reality. Whatever its cause, the anorexia itself calls for treatment, and one general rule is that the patient must be isolated from family and friends. Apart from this measure, therapy varies according to the case, and the writer frankly leaves unanswered his own questions as to how relapses may be prevented and what proportion of so-called simple cases are early states of melancholia or dementia præcox. Dr. Nathan shows how an apparently simple symptom, when approached as a problem in psychopathology, reveals complexities that we are apt to leave out of consideration.

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[*] Untersuchungen über den Jodstoffwechsel, Biochem. Zeitsch., 1923, cxliii., 246–262.

## MOVEMENTS OF THE MANDIBLE.

THE movements of the lower jaw, in the apparently simple actions of opening and shutting the mouth, are somewhat more complex than may be imagined. The structure of the joint, which contains an inter-articular cartilage and double cavities, suggests this in itself. The mandibular condyles do not rotate in the glenoid cavities, but round an axis running transversely at a much lower level. Some have even maintained that this axis passes through or near the angle of the jaw, but observation will show that the angle moves back almost as much as the condyle moves forward when the mouth is opened, and there seems to be a general agreement among observers that the axis of rotation goes through the lingula or inferior dental foramen, roughly about halfway down the ramus. Here is the raison d'être of the two cavities in the joint; the condyle, moving forward, must rotate within the concavity of the meniscus, which is therefore drawn forward with it, and the upper joint cavity allows of this sliding of the inter-articular cartilage on the temporal bone. Any interference with the freedom of either of these cavities will affect the complete movement, for the freedom of action of both of them is necessary, and one by itself is of no use. With these facts in mind, it is interesting to turn to an account of the action and strength of the muscles concerned in jaw movement, such as that given by Mr. Sheldon Friel in the April issue of the *British Dental Journal*. Mr. Friel, reporting on the use of the Dental Board's facial and jaw dynamometers, gives short descriptions of the results he obtained with these ingenious instruments, and considers them from the orthodontic point of view. The static functions of the muscular cheeks and lips, and of the tongue, with which he also deals, are of importance to orthodontists, and we look forward with confidence to further expansion and investigation in this line of research.

## THE SUPERIORITY OF THE NON-SMOKER.

A FEW weeks ago we set out a German view of nicotine recalling Prof. H. Kionka's statement that there is hardly a single pathological condition which tobacco cannot cause or aggravate. But, considering the universality of the smoking habit and the large number of heavy smokers, Sir Humphry Rolleston is certainly within the mark in regarding as remarkable the comparative rarity of undoubted lesions due to smoking. In his address, which we print on another page, he touches on the still more difficult question of the influence of smoking on the higher intellectual centres. In America wide credence has been given to the results of psychological tests on medical students which have demonstrated a lowering of mental efficiency in a percentage of smokers varying from 10 to 25. Sir Humphry Rolleston himself admits that abuse of tobacco may be a contributory factor in neuropathy, although more often no doubt it is the other way round and the constant smoking is a manifestation of neuropathic constitution. We print this week also a continuation of Dr. Rosslyn Earp's studies of the differences between smokers and non-smokers at Antioch College, Ohio, U.S.A. (see p. 1018), which again show a superiority of scholarship achievement among the non-smokers, although in intelligence—so far as this is measured by the mental tests used—the balance is slightly in the other direction. In a note on Dr. Earp's previous paper[1] we suggested that the greater success of the non-smokers both in athletics and in scholarship might be explained by the habit of many athletes of not smoking during training, coupled with an association between good physical and good mental equipment. In reply to this, and apart from the data given in his paper, Dr. Earp tells us that he asked all the Antioch non-smokers why they did not smoke; 50 per cent. of them gave no definite reason, but of the others only two gave a reason in any way connected with athletics. To test an opinion given by one student that the athletic group in American high schools tends to be the fast-living and smoking group, Dr. Earp investigated the relative frequency of school and college "letters," or "colours," as we should call them, and found that—

Of 177 smokers in 1925—
21 have college "letters,"
74 got "letters" at school.

Of 176 non-smokers in 1925—
21 have college "letters,"
56 got "letters" at school.

By this criterion the non-smokers show no athletic superiority. We admit that so far as the Antioch students are concerned our hypothesis of non-smoking for the sake of training does not appear to be correct, but we would still maintain—and we think Dr. Earp will agree—that the facts so far brought forward do not justify any definite conclusion as to a *causal* connexion between the use of tobacco and lower mental or physical achievement.

## VARIATIONS IN FILTERABILITY OF THE ROUS FOWL SARCOMA.

THE sarcomata affecting fowls differ from mammalian malignant new growths in one particular. They are transmissible to other fowls by the inoculation of cell-free filtrates, whereas attempts to propagate tumours from rats or mice in this way have hitherto failed. In a communication to the current number of the *British Journal of Experimental Pathology* W. E. Gye and C. H. Andrewes suggest that the fowl sarcomata would be universally accepted as typical highly malignant neoplasms had this property of filterability remained undiscovered. It seemed, therefore, important to study this property, to determine how far it is constant and to investigate the conditions under which it varies. The technique of preparing a filtrate is set out in detail. If the optimum proportion of diluting fluid is added to the tumour emulsion, which has been pounded in a mortar with sand, the process of obtaining 10 c.cm. of filtrate by a two-stage process should take less than an hour. Filtrates through Chamberland $L_2$ or Mandler candles, when examined with the dark field apparatus, are optically almost empty; occasional particles are seen, but they are very rare. Under the ultra-microscope immense numbers of particles are revealed. The experimental results of the inoculation of filtrates into Plymouth Rock chickens are curiously variable. It is difficult to obtain precise comparisons between filters because of the great variability in the properties of candles; one candle of the same grade may differ from another very considerably in rate of filtration and in infectivity of filtrate. It is evident, however, that filter candles absorb a large part of the agent—or agents—which cause the fowl sarcoma. But the virulence of filtrates from different tumours also varies, so that 1 c.cm. of filtrate through a Chamberland $L_2$ candle is sometimes as effective in inducing a tumour as is 1 c.cm. of the coarser candle ($L_1$) filtrate. These differences were attributed for a long time to inevitable variations in biological experiments, and to differences in filter candles, choice of tumour material, and so forth. Further investigations, however, proved that an individual tumour may vary in its filterability. On July 7th, 1925, a tumour produced a month previously by the inoculation of 0·1 c.cm. of a Mandler filtrate was taken and minced, a bird being inoculated with 0·1 c.cm. of the cell emulsion. The resulting tumour grew, but very slowly. The Mandler filtrate from this tumour was not infective. The tumour was passed by cell inoculations through

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[1] THE LANCET, 1925, i., 194.

14 successive birds, the growth being tested in each generation as to its power of inducing tumour formation with cell-free filtrates. For six months, covering some 12 passages, the filtrates were non-infective. At the end of this time the histological structure remained constant, except that the bundles of spindle cells were more compact. Metastasis formation was infrequent and the hæmorrhagic points and masses commonly seen in metastases of this tumour were absent. Further, the tumour suffered a loss of proliferative power, became relatively benign, and showed fluctuations in growth energy similar to those characteristic of mammalian transplantable tumours. In February, 1920, the tumour again altered its character, forming (in chicken No. 72) a large, soft hæmorrhagic growth with internal hæmorrhagic metastases; 1 c.cm. Mandler filtrate of this tumour killed a bird in 15 days. Filterability had therefore returned. While these experiments were in progress, another readily filterable strain of the tumour, recently obtained from Dr. Peyton Rous, was being carried on; this seemed to exclude the possibility that the results recorded above could be explained by any variations in technique. The authors conclude that the property of filterability is variable; it is not fixed and unalterable like the microscopical anatomy of the tumour. The explanation of this sudden disappearance and reappearance of filterability has not yet been determined; but in view of these findings, the presence of this property can hardly be taken to constitute a fundamental difference between the Rous fowl sarcoma and other transplantable tumours.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified:—Surg. Comdr. H. B. Parker to the *President*, addl., for R.N. Medical School, Greenwich. Surg. Lt.-Comdrs.: R. Lyon to the *Constance*; L. S. Goss to the *Colombo* (on exchange); R. A. Brown to the *Vivid*, for R.N. Hospl., Plymouth; J. M. Horan to the *Broke*, to be accommodated in Whitshed; L. R. Warburton to the *President*, addl., for three months' post-graduate course and H. L. Douglas to the *Pembroke*, for Sheerness Dockyard (temp.). Surg. Lt.: J. Cussen to the *Colombo*.

A. S. Bradlaw to be Surg. Lt.

## ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. Clarke, R.A., Res. of Off., to be Maj. whilst re-empld., and relinquishes the rank of Lt.-Col.

Capt. H. G. Dressing, R.A., Res. of Off., is re-empld.

Lt. (on prob.) T. A. J. M. Dodd from the secd. list is restd. to the estabt.

### SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. A. S. Burns resigns his commn.

### TERRITORIAL ARMY.

Lt. P. Hayes to be Capt.

Sanitary Companies.—Capt. H. C. Sands to command 6th (London) Sanitary Company.

## ROYAL AIR FORCE.

Flying Officer G. P. O'Connell is promoted to the rank of Flight Lt.

Flight Lt. J. D. Woodrow is transferred to the Reserve, Class D. 2.

## INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. W. H. Tucker on account of ill-health.

## DEATHS IN THE SERVICES.

Lt.-Col. Edward Hearne Joynt, R.A.M.C., who died at his residence at Blackheath on April 27th, aged 79, graduated M.D., M.Ch., in the Royal University of Ireland in 1870, and obtained his first commission in the Army in 1871, reaching the rank of Lt.-Col., R.A.M.C., in 1891 and retiring with that rank in 1902. He served in the Soudan in 1885–6 and also with the Frontier Field Force (medal and bronze star). In 1895 he was senior medical officer at Kingston, Jamaica.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXXIII.—THE TREATMENT OF SCIATICA.

THE term sciatica properly denotes an inflammation of the interstitial tissue of the sciatic nerve or its roots. Unfortunately, the word is often used loosely, and for this reason it must be emphasised that the methods of treatment described below are applicable only to the true sciatic neuritis, and that the first essential for their successful employment is accurate diagnosis. Most diagnostic errors will be avoided if it be remembered that (1) in sciatica the inflamed nerve is always tender; (2) since the sciatic nerve sends no branches to the front of the thigh, any condition in which the pain extends to the front of the thigh or groin is not sciatica alone; (3) sciatica causes no muscular paralysis and no gross sensory loss; (4) it may abolish the ankle-jerk but never the knee-jerk. When sciatica is associated with arthritis of the hip, treatment should first be directed to the latter.

### LOCAL TREATMENT.

There are four or five methods which may give early and rapid relief, if not complete cure, the choice depending on the severity and on the stage of the ailment. With all of them the general principles which govern the treatment of inflammatory conditions must be practised. The patient must be kept at rest in bed and heat in some form should be applied to the affected limb; for this purpose thermogene or other warm wool stitched loosely into a rather tight-fitting garment so as to cover the hip and outer part of the thigh will be found convenient. Generally speaking, it is not desirable to splint the limb, for the patient will wish to move in bed. The bed, for his comfort, should be as soft as possible.

### *Electrical Methods.*

(*a*) *Anodal Galvanism.*—The treatment by galvanism is less used now than formerly, having to some extent been ousted by methods of injection. Small currents are useless, and the provision of a current of at least 20 milliamps necessitates a large and unwieldy battery, or else a pantostat, either of which it is troublesome to take to and from the patient's own home. But if the patient is in a hospital or nursing home, galvanism in my opinion is still the method of choice for mild or moderate cases.

A current of 20 milliamps passed from the buttock along the back of the thigh for 20 or 30 minutes daily—or, if possible, twice a day—has a very soothing and beneficial effect. Proper precautions must be taken to avoid burns and painful shocks; it is essential that large electrodes be used and that they be well padded and wetted; the anode should be at least six inches by four, the cathode at least twice that size. The anode is tightly applied to the buttock of the affected side and the cathode to the back of the knee. When the electrodes are in position the current is started and gradually increased until the required current is passing; as the patient's resistance will diminish the ammeter must be watched, the current kept approximately at the assigned strength for the duration of the sitting, and then gradually reduced to zero before the wires are disconnected.

Galvanism may be combined with ionisation (the position of the electrodes then being reversed), but I am doubtful whether anything is gained by the addition, and the danger of skin troubles is increased. The direct application of electrolysis to the nerve has been favourably reported on by Dr. E. A. Goulden, but I have no experience of this treatment.

(*b*) *Diathermy* provides a comforting, warm, inward glow which may be most soothing to the inflamed sciatic nerve. It is suitable for the same kind of case and under the same circumstances as galvanism, and it is applied through large wet pads placed one on the back and one on the front of the thigh.

### *The Use of Oxygen.*

Two or three years ago the procedure of injecting oxygen into the subcutaneous tissues of the affected limb was introduced into this country. This method of treatment is suitable for acute and subacute cases, and though it may be somewhat uncertain, its extreme simplicity makes it always worth trying.

To a small oxygen cylinder fitted with the usual tap a short piece of rubber tubing is attached; it leads by means of a tapering glass connexion to a piece of light tubing of narrow bore, and, for convenient manipulation, about four feet in length. The tap of the oxygen cylinder is opened slightly, the end of the fine rubber tube is placed in a tumbler of sterile water, and the oxygen flow regulated till the bubbles are rising at the rate of about ten per second. The tube is withdrawn from the water and a sterilised hypodermic or Record needle is attached to the end of it. The needle is inserted just through the skin over a painful part of the limb and the oxygen immediately begins to infiltrate the subcutaneous tissue. If the flow of oxygen be too strong the rubber tubing will blow off the needle when the injection is begun. Injection is continued at the same spot as long as the infiltration continues to extend freely and until all the surrounding area is well ballooned up. Then the needle is withdrawn and a second injection is made elsewhere. It is sufficient to balloon the thigh and buttock at one sitting and either the same region or the leg a few days later. The subcutaneous emphysema spreads somewhat after the injection has ceased and it lasts, as a rule, two or three days. When it has gone the same area may be re-injected. Two or three injections often give the most surprising relief; this technique and the injection of a small amount of novocaine into the nerve sheath enabled a ballet-master, who had been tied by the leg to his bed in London, to start training a ballet in Paris 14 days after treatment was begun.

The way in which oxygen acts in these cases is not known, but the mechanical action in providing a cushion within the limb is probably a factor. It is likely, too, that the oxygen has a favourable effect on the inflammation in the fibrous tissues, and that by penetrating among them and loosening them it separates small inflamed surfaces and breaks down many minute adhesions.

### *Injections of Saline.*

One of the most reliable methods in the treatment of sciatica consists in the injection of two to four ounces of normal saline solution into the sheath of the nerve. This is the method of choice in a case which has persisted unabated for a month or six weeks, and its object is, by distending the sheath, to relieve pressure on irritated nerve-fibres and to break down adhesions which are tending to make the sciatica chronic.

The injection is usually made either at the level of the ischial tuberosity, where the nerve, as it emerges from under cover of the gluteus maximus, is comparatively superficial, or in the middle of the buttock, where the nerve has just left the sciatic notch. The course of the nerve at the lower level can usually be determined by the line of tenderness and can be marked on the skin. A small area of skin lying on this line having been anæsthetised by 2 per cent. novocaine solution, a needle about four inches long is entered vertically as the patient lies on his face. The depth at which the nerve is encountered varies considerably with the build of the patient, but the patient knows when the needle touches the nerve, and the physician may sometimes feel the resistance of its sheath. I prefer at this stage, following Wilfred Harris's technique, to inject a single cubic centimetre of saline. If the patient experiences a thrill passing down to the heel or calf, one knows that the point of the needle is within the nerve sheath; if he experiences no such sensation the needle may have passed through the nerve. When one is satisfied that the point is within the nerve sheath, 2 c.cm. of the novocaine solution are injected slowly, and when the pain has ceased and the leg feels numb, three or four syringefuls of warm (104° F.) sterile normal saline are injected with a 20 c.cm. Record syringe.

The patient should be kept in bed for a day or two and a Dover's powder (15 gr.) should be given on the first night to allay restlessness and discomfort. A second injection may be given after five or six days. If the chief pain is in the buttock, it is well to give one of the injections as high up the nerve trunk as possible—i.e., just below the sciatic notch; there the nerve may not be so easily found by the needle as it is at the lower border of the gluteus maximus.

### *Epidural Injection of Antipyrin.*

None of the methods of treatment hitherto described are successful when the site of inflammation is in the roots of the sciatic nerve, and for cases of this kind injection into the epidural space within the sacral canal was devised. Though the dura extends down as far as the middle of the sacrum, it lies anteriorly in the sacral canal, and, by means of a needle passed upwards through the sacro-coccygeal ligament, substances can be injected around it and made to bathe the nerve roots as they emerge from it. The substance which has hitherto been the most successful is a concentrated (40 per cent.) solution of antipyrin, the use of which was introduced by Dr. F. Högler, of Vienna, in 1922. The technique is not difficult.

The patient may be prepared by an injection of half a grain of morphine half an hour beforehand, for the distension of the epidural space is often attended with considerable pain. He places himself in the knee-elbow position. The appropriate area of skin having been well rubbed with iodine and anæsthetised with novocaine, a needle, four or five inches long, is inserted in the middle line one inch above the top of the natal groove, pointing headwards at an angle of 60 degrees to the horizontal; it impinges on the sacro-coccygeal ligament, a firm elastic structure which is easily distinguished from bone by the sensation conveyed by the needle to the fingers. The needle is passed through the ligament and then its direction is at once changed, so that it lies parallel to the sacral canal. It is pushed cautiously up the canal for two inches or more in the middle line; if one deflects from the middle line at this stage the needle may encounter a nerve-root and cause the patient a sharp pain. Cerebro-spinal fluid should not be seen, for its appearance would indicate that the dura had been penetrated. The point of the needle once in position may be deflected a little towards the affected side, and then, by means of a Record syringe, 10 c.cm. of warm antipyrin solution are slowly injected. Some resistance may be met with and the solution should be forced in slowly; if pain is caused, it lasts only while the resistance is actually being overcome. When the needle is withdrawn, the skin opening is closed with collodion and the patient then lies on his affected side for at least an hour. By that time he is usually free from any actual pain, though he may have a little discomfort in the sacrum or buttock. Some pain almost invariably occurs on the third day afterwards, but it only lasts 24 hours and is easily relieved by rest and aspirin.

While primarily adapted for root sciatica, this treatment is almost equally successful when the inflammation is in the stem. In my experience (six cases), though complete freedom from pain may not be secured, the great merit of the method is that it removes the crippling element and enables the patient to walk and to move freely in bed within a few hours. Högler sometimes gives a second injection after a week's interval, but I have hitherto found galvanism sufficient when supplementary treatment has been required. This method is applicable in the acute stage of sciatica and may give good results even in cases of long standing.

### *Surgical Methods.*

There are occasions when it may be well to expose the nerve in cases of sciatica; stretching it with the finger may do good at almost any stage of the illness and longitudinal incision of the sheath may give relief, though for different reasons, both in the acute and in the very chronic case.

## GENERAL TREATMENT.

In the early stage the first essential is, with the aid of simple hypnotics, to secure sufficient sleep for the patient in order that he may not become exhausted. During the day the pain should be relieved by liberal doses of aspirin. As soon as the acute phase has subsided, whether local treatment has been given or not, the patient should have a general tonic; calcium lactophosphate will be found suitable. Debilitating factors such as infective foci, glycosuria, or albuminuria should be sought for, and constipation should be carefully treated. Removal of the teeth at this period is not to be recommended; if the patient has pyorrhœa their extraction may be advisable later, but the first effect of edentition is debilitating, and at a time when the patient is just recovering from an acute illness and requires plenty of nourishment palliative measures are more satisfactory.

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# Special Articles.

## OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

### ANNUAL CONGRESS, APRIL 29TH–MAY 1ST.

THE annual congress took place at the house of the Royal Society of Medicine on April 29–30th and May 1st, Sir JOHN PARSONS presiding.

### *President's Address.*

Sir JOHN PARSONS devoted his address to a consideration of the progress of ophthalmology and the part played in this by this body, as well as what it might hope to achieve in the future. Advances in biology must of necessity lag behind those in physics and chemistry, seeing that biological processes depended fundamentally on physico-chemical processes, a fact grievously neglected by most psychologists. Ophthalmology could be regarded as a branch of biology. Medicine was now gradually emerging from the dominance of empiricism and metaphysical speculation, but, owing to the fundamental constitution of human nature, it could not be expected ever to rank as a pure science. Medicine dealt with the preservation of life, more important even than the acquisition of wealth, hence the tendency to take short cuts in medicine. Yet there was no royal road to scientific certitude. Confronted with disease, man's eagerness to get well led him to clutch at any straw, and he was still under the subtle witchery of the quack and the charlatan. Against this quackery it was the duty of the Society to wage war, though without self-glorification, for there was an empiricism which was legitimate in the practice of medicine. The distinguished names the Society had included, and the 45 volumes of its transactions, showed how well the proper functions of a medical society had been fulfilled; it had kept abreast of the times and fostered research. Still it was possible that sometimes too narrow a view of the scope of ophthalmology had been taken, and that it did not sufficiently include observation of the ways in which ophthalmology impinged on public life, and how advances in other sciences could be applied to this.

Among the efforts to better the working community there of necessity arose ophthalmic problems, such as those concerned with illumination and fatigue, only few of which could be solved without research. He referred to the labours of the Medical Research Council, especially in regard to the legibility of types, the effect of flickering lights, light therapy, and the effects of illumination in industry, the latter in association with the Department of Scientific and Industrial Research. As there seemed a difficulty in finding sufficient workers qualified to undertake these researches, Sir John Parsons appealed to members to encourage clinical assistants and others to equip themselves to carry on this class of work. A good example of his meaning was afforded by the effect of light therapy in certain disease conditions. That ophthalmology was a narrow and sharply delimited field of work was a view which was supported by the average text-book and curriculum, but it was fundamentally erroneous. As a receptor organ, it could only be adequately studied as an integral part of that varied receptor apparatus which was the gateway of perception. The average ophthalmologist seemed content to acquire only the rudiments of optics. Adequate stimuli to the eye included wave-lengths possessing peculiar and often deleterious properties when applied to living tissues, especially such delicate ones as those of the retina. A warning of the potency of these stimuli was needed, especially at a time when light therapy was being applied by practitioners who were ignorant of the properties of light.

It was, he continued, lamentable that the pretensions of a relatively small but influential group of sight-testing opticians should preclude ophthalmologists from taking part in collaborating with those who were devoting their lives to optical investigations. Still the problem presented by the sight-testing optician was not insoluble. Stimuli impinging on receptor organs set up nerve impulses, and there was evidence that these nerve impulses were the same in type, whether they originated in the eye, in the skin, the muscle, or the central nervous system, and ophthalmology should take cognisance of them all. The bane of specialisation was isolation, and its cure was coöperation, and he hoped the Society would continue to contribute worthily to the repair and improvement of the great edifice which was erected by its predecessors and had been entrusted to the care of its present members.

Prof. H. E. ROAF gave an address entitled

### *Some Observations on Colour Vision.*

In an attempt to investigate the way in which radiant energy was transformed into nerve impulses, he set himself to endeavour to understand in what way colour vision was related to the wave-length of light. It was necessary to search for some kind of differential apparatus in the retina, and he set a colour-blind person to copy a coloured diagram by using an ordinary box of paints. By looking through a blue glass one could not distinguish the difference oneself, hence the view obtained was that of a colour-blind person. He examined 28 cases, and found that in all of them the defect was in the red end of the spectrum. Pigments reflected mixed light, and by cutting out the red end of the spectrum most of the mistakes disappeared. Unless radiant energy was absorbed it would not stimulate the nerves, though it did not follow that all the light absorbed would stimulate. He thought that, on the analogy of chlorophyll synthesis in plants, the colour function might be sought in the cones of the human eye. In the cones of birds, reptiles, and amphibians there were coloured globules, situated at the junction of the cone and the cone body. Birds had cones which would perceive red light only, and cones which perceived red and green, and Prof. Roaf proceeded to elaborate his idea that colour-blindness was due to a deficiency of pigment in minute globules. He thought there might also be a good deal to be said for varying degrees of sensitivity of the eye to different colours. His studies were still in progress.

Dr. GEORGE MACKAY (Edinburgh) gave a résumé of the work of Schaaff, of Strasbourg, which was somewhat on the same lines as that done by Ishi-Hara. Dr. Mackay himself raised the question whether colour perception rested with the retina at all, suggesting the likelihood that it was a function of the nerve cells in the cerebral region. For instance, hæmatochromatopsia was a definite condition which occurred without serious impairment of the form sense, and might take place purely as the result of a delicate occipital lesion. He proceeded to discuss the theory just advanced by Prof. Roaf.

The PRESIDENT drew attention to the variation in the intensity of the colours in books reproduced by lithography according to the stage of the impression struck off. The trichromatic hypothesis was a useful one for the understanding of colour vision.

Mr. RAYNER BATTEN read a paper in which he emphasised the value of collective drawings of diseases of the fundus as an aid to research, and showed a large series of coloured drawings made by Messrs. Hamblin. He suggested that it would be well to have a curator responsible for these.

Mr. TREACHER COLLINS, Mr. ERNEST CLARKE, and the PRESIDENT spoke favourably of the idea.

Mr. GEORGE YOUNG (Colchester) read the account of a case under his care, the subject of chronic glaucoma, in which, though the vision had become reduced to perception of hand movements, it became restored to normal with a correcting lens. At one stage it looked as if recovery would be impossible.

### *Intra- and Extra-ocular Melanomata.*

Thursday afternoon was devoted to a discussion of this subject. It was opened by Mr. G. W. SPENCER, Dr. ARTHUR WHITFIELD, and Mr. TREACHER COLLINS.

Mr. SPENCER said that the melanotic pigment, melanin, was now recognised not merely as a side product of an infrequent variety of cancer, but as being directly connected with disturbance of cell metabolism. At first localised to special cells, and apparently benign, it later took an integral part in the development of cancer. Extra-ocular melanomata had the general characters of those of the skin, and were amenable to the same treatment—namely, excision before the onset of malignant disease. Intra-ocular melanotic disease was beyond the control of surgery, and removal of the affected eyeball did not prevent the patient ultimately dying of generalised cancer.

Dr. WHITFIELD entered into the histology of these growths in the skin, and discussed the earliest detectable changes, which he considered to be at the bases of the interpapillary epithelial ridges. He said the solution of epithelial fibrils and the isolation of cells was coincident with the appearance of intra- and inter-cellular pigment. He did not consider that pigment production was an essential in nævus. When a mole was removed and submitted for an opinion as to whether or not it was malignant it was often very difficult to be positive.

Mr. COLLINS showed by the epidiascope a series of drawings of intra-ocular melanomata, both innocent and malignant. He said he considered that, in the normal tissues of the eyeball, melanoblasts were both epiblastic and mesoblastic in origin, and that in the iris innocent melanotic growths could arise from both those forms of tissue. Innocent mesoblastic melanomata might be either localised or diffuse and were a hyperplasia of the surface endothelium, or a formation of clump cells, or both combined. Malignant growths might start from these innocent ones, and consisted of spindle-shaped cells and clump cells. Metaplasia of endothelial cells into spindle-shaped cells took place both in the normal development of the eye after traumatic lesions and in connexion with malignant neoplasms. Malignant melanotic epithelial growths might, in rare instances, originate in the pigment epithelium of the ciliary body, possibly also from the pigment epithelium of other portions of the uveal tract.

The discussion was continued by Mr. AFFLECK GREEVES, Mr. R. FOSTER MOORE, Dr. HOUWER, Mr. RICHARDSON CROSS (Bristol), Mr. R. C. DAVENPORT, and Mr. C. H. USHER.

On Friday morning Mr. J. H. TOMLINSON contributed a note on the comparative brightness values of the two eyes and a single eye, which followed a contribution by him on the subject some years ago. His conclusion was that the two eyes together had an advantage over one eye in the proportion of 115 to 100.

### *The Value of Ultra-violet Light in some Eye Diseases.*

Mr. C. B. GOULDEN, in a paper on this subject, said that ultra-violet light seemed to have provided a means of curing one of the disastrous diseases of the eye—namely, tuberculosis of the iris and ciliary body. It did not seem to produce benefit in a number of other conditions, such as episcleritis, sclerosing keratitis, chronic irido-cyclitis. He described the technique of the applications.

Mr. W. S. DUKE-ELDER read a paper on the same lines, and detailed the procedure being adopted at the Royal London Ophthalmic Hospital. He agreed with everything advanced in Mr. Goulden's paper, and entered into a consideration of the thermic and electro-chemical reactions produced by the rays. He said the chronic blepharitis seen in sun-starved city children yielded well to ultra-violet irradiation.

The PRESIDENT spoke of extraordinary benefit which resulted in a most stubborn case of his own, of irido-cyclitis with keratitis punctata, following treatment in this way by Mr. Duke-Elder.

Dr. W. O'DONOVAN, speaking as a skin physician, supported all that had been said, the remarks being equally applicable to tubercle—particularly lupus—of the skin.

Mr. M. S. MAYOU gave a careful account, supported by some beautiful slides, of siderosis bulbi; Mr. R. DAVENPORT read a communication on senile macular exudative retinitis; and Miss MARGARET DOBSON submitted one on morbid change in the macular region as seen by red-free light.

### *Clinical Demonstration.*

At the demonstration and discussion of numerous clinical cases at St. Bartholomew's Hospital on Friday afternoon, arranged by Mr. Foster Moore, an interesting expression of opinion took place on the application of radium to rodent ulcer. Mr. Foster Moore showed a young woman who, when she came under his care, had been having radium treatment for rodent ulcer of the inner canthus of the eye. He cut away the disease as freely as he was able, but found it had involved the ethmoid and had bored into it. Six months ago there were evidences of regrowth, and he now asked advice of members as to whether the orbit should be exenterated. The pathological report was that it was rodent, not epithelioma. His own experience of the treatment of rodent ulcer by radium was unfortunate, for though the surface growth became smaller, penetration seemed to go on in spite of the application, as happened in this case. Radium should only be applied as a last resort.

Mr. GOULDEN said his experience of the treatment of this condition by radium agreed with the exhibitor's. Often the surgeon's aid in these cases was not sought until eye movements were defective, by which time the orbit had usually become invaded, with involvement of the nasal bone, the ethmoid, the floor of the frontal sinus, and the roof of the maxillary antrum. He described a recent case in which he operated in conjunction with the aural and nasal surgeon, a practice he recommended.

Mr. HARRISON BUTLER spoke of three fairly recent cases of rodent ulcer in the eye region which were treated by radium, and seemed to improve for a time, but all were now dead.

Mr. MALCOLM HEPBURN strongly advised that this patient's orbit be eviscerated in order to preserve life.

Mr. GREEVES agreed with Mr. Hepburn; it would be useless to try to remove this growth if the retention of a useful eye was aimed at, and the eye ought to be sacrificed.

The PRESIDENT expressed his agreement with the views which had been given; to think that rodent ulcer could be cured in this way was very fallacious, and he was always disappointed to have at his clinic a case of rodent ulcer which had already been subjected to radium.

Among the other cases was one of dermoid of the orbit, which, when removed, was found to contain a fairly fully developed tooth; also two cases of Eales's disease in brothers.

The Friday evening session was given up to a discussion on

### *Birth Injuries of the Eye.*

Dr. COMYNS BERKELEY, in opening, said his 30 years' experience led him to believe that injuries to the eyes caused as a result of labour were very rare, though he did not examine infants' eyes with the ophthalmoscope. Still, various writers had given varying proportions for such injuries.

Mr. ERNEST THOMSON said it was possible to overlook many birth injuries of the eye, and the ophthalmic surgeon should constantly have in mind the possibility that certain eye conditions seen in later life might have been due to damage sustained at birth. Retinal hæmorrhage was by no means infrequent, and he thought a series of new-born infants should be examined for these, to see in what proportion they occurred.

Dr. LESLIE BUCHANAN spoke chiefly of the injuries which indirectly affected the eye, and entered into a consideration of these in considerable detail.

Mr. F. A. Juler, Mr. A. W. Ormond, Mr. J. Rowan, Mr. Treacher Collins, Dr. A. J. Ballantyne, Mr. Harrison Butler, Dr. T. H. Whittington, and the President also took part in the discussion.

On Saturday Mr. A. F. MacCallan and Miss Ida Mann read communications on papilloedema and choroido-retinitis in a pedigree bull, the former on the appearances seen during life, and the latter on the histology.

Mr. E. Fincham demonstrated and described his slit-lamp, and showed slides of the structure of the retina, which the President said were the most beautiful sections he had ever seen. Mr. Fincham also submitted some observations on the accommodation of the eye.

After a meeting of British ophthalmologists a party journeyed to the National Physical Laboratory, at the invitation of Sir Joseph Petavel, the Director, and inspected its various departments. On Thursday evening members dined together, and during the three days of the Congress a fairly extensive exhibition of instruments and apparatus used in the specialty was held in an adjacent room, including slit-lamps, amblyoscopes, and synoptiscopes.

## A CONGRESS ON HYDROLOGY IN CZECHO-SLOVAKIA.

The annual meeting of the International Society of Medical Hydrology, under the presidency of Dr. Gustave Monod and subsequently Dr. Mougeot, has taken place this year (April 15th–22nd) in Czecho-Slovakia, following invitations received from the Czech Government and Spa Municipalities. Representatives of 13 countries were present at the various meetings, the party numbering about 60 persons. The British contingent, 28, included two from the Ministry of Health, Sir T. Horder, Sir W. Willcox, Sir H. Waring, and Prof. D. Stanley, of Birmingham University, as well as Mr. W. A. Appleton and Mr. Izard, of the Federation of Trades Unions and the Prudential Approved Societies. For the unfailing and varied interest of the tour, its smooth organisation and comfort, cordial acknowledgments are due not only to Dr. Schmidt and Dr. Porges (the representatives of the Society in Czecho-Slovakia), but to the authorities in Prague, the Legation in London, and especially to Dr. Driml, who conducted the party through the country as representing the Czech Ministry of Public Health.

At Karlovy-Lazne (Karlsbad), Marianske Lazne (Marienbad), and Frantiskovy Lazne (Franzensbad) the Society was received by the burgomaster and the medical societies, and after a formal meeting in each place entertained to dinner. At Karlsbad Dr. F. Kraus discussed the pharmacology of sulphate of sodium waters, and Drs. Hermann, Glénard (Vichy), and Roubischek the treatment by waters of disorders of the liver, Dr. Kampe giving a lantern demonstration on the geology and history of the springs. From Karlsbad a visit was paid to the highly radioactive waters of Joachimsthal, now one of the State spas, where Drs. Stauch and Tommanec gave interesting discourses on the work done there and in the radium laboratories at Prague. At Franzensbad papers were read on the action of effervescent baths by Drs. Selig and S. Wasserman. Prof. Zörkendörfer, director of the Institute of Balneology at Marienbad, who is charged with the oversight of the springs and mineral waters, met the party at Franzensbad. His clear and illuminating demonstrations, given in the open air at the various sources and on the moor, and subsequently in his institute at Marienbad, will long be remembered by those who heard them. After arrival, with aeroplane escort, at Marienbad, a meeting of the Society took place for discussions (1) on glandular insufficiency and spa treatment, by Dr. Porges, Prof. Loewy, and Dr. Hans Kopf; (2) hypertonia and its treatment, by Drs. Pflanz, Guillaume (Spa), Mougeot (Royat), Schober (Wildbad), and others.

From this point, and for the remainder of their journey, the party were given a special train with sleeping cars and proceeded to Prague for an official reception and luncheon. The Society and its guests were received at the Municipal Hall by representatives of the Ministries of Public Health and Education and the burgomaster, Dr. Baxa. Prof. Kulhavy was present on behalf of the Section of Public Health and of the medical faculty of the Czech University, Prof. Coury for the German University, and Dr. Mladejovsky, who is professor of balneology in the Czech University at Prague, for the Central Association of the Czecho-Slovakian spas. Others present were Dr. Hrdlicka, who represents Czecho-Slovakia in the Health Department of the League of Nations, Dr. Moravek, director of the State spas in the Ministry of Public Health, and Dr. Procharzka, city health officer. After luncheon visits were paid to some of the more remarkable places in this ancient and beautiful city, including the great sanatorium for paying patients under Dr. Jedlicka.

At Pistany, a hyperthermal spa on the borders of the mountains in Slovakia, the congressists were met on behalf of the prefecture, the local medical society, and Mr. Winter, proprietor of the spa. The remarkable Irma Bath Establishment and the Pro Patria Hospital were visited. At the hospital, where insured persons suffering from rheumatic affections and injuries are under treatment by mud baths, Dr. Reichart gave an interesting demonstration of the technique employed in these baths. Particular interest was shown in the methods used for "heart cooling" during thermal and hyperthermal applications. The circulation of cold water through a coiled Leiter's tube applied to the cardiac region is here used in order to prevent the distress, fatigue, and tachycardia which often attend or follow such applications of heat. By this means the necessary thermal treatment is often made possible for weak or sensitive persons, and debilitating after-effects are avoided.

Two discussions of considerable interest took place at Pistany. The first, on the actions and therapeutic uses of mud baths, was introduced by Drs. Schmidt and Reichart of Pistany. Profs. Vinaj, Di Tommasi, and Piccinnini described similar treatment in Italy—at Abano, Agnano, and Salso-Maggiore—and Drs. Fodor (Vienna), Schober (Wildbad), and S. Wasserman (Franzensbad) followed. Dr. Schmidt, with Strasser and others, suggests that the modus operandi of heat, especially in local applications like the Pistany packs of hyperthermal mud, is actually a resolution and reabsorption of extravascular exudations. The passage of these "foreign" proteins into the blood stream is in effect an auto-inoculation, such as commonly occurs in tuberculosis, with effects analogous to those of protein shock. In any case great local activation of the blood and lymph circulation is produced in these baths, and all speakers were agreed that this local action was beneficial in many chronic rheumatic conditions. Care was, however, necessary to avoid debility, and emphasis was laid on the need for rest after such baths, of which visitors to Pistany are reminded by the carrying chairs or rickshaws standing outside the bathing establishments. After luncheon a lantern exhibition of the history of the spa was given by Dr. Paul Veres. The evening was occupied by an international discussion on the ætiology and treatment of chronic rheumatic affections (vide infra).

The last day was spent in the Tatra Mountains. Starting from Tatranske Lomnica, the party visited Dr. Guhr's sanatorium (c. 4200 feet) at which many cases of exophthalmic goitre are treated by physical methods, and afterwards the Palace Sanatorium at Novy Smokovec (3300 feet), where anæmia, debility, and catarrh, as well as tuberculosis, are treated by sunshine, cool mountain air, and graduated exercise and rest. Dr. Szontagh, the medical director, gave a short account of the treatment of exophthalmic goitre in the Tatra Mountains. A great factor was rest and almost monastic quietness. The place was sheltered from the north and surrounded by pine woods. The air was cooling and sufficiently rarefied with little wind. Another essential feature was the application of cold snow-water in bags over the region of the heart for one hour two or three times a day, changing the water when it became warm. Many cases were referred to the Tatra Mountains and returned to work after three to six months.

At the luncheon in the sanatorium at the end of the tour, Dr. Fortescue Fox expressed the pleasure with which the Society had studied these natural resources of Czecho-Slovakia.

In the course of these meetings Dr. Monod was elected for a second year as president; 40 new members were admitted to the Society, including eight from Germany; Sir H. Rolleston (Cambridge), Prof. Dietrich (Berlin), Prof. Zörkendörfer (Marienbad), and Prof. Devoto (Milan) were proposed as honorary members; and the Council's Committee on Rheumatism was constituted as follows: Dr. Strasser (Austria), Dr. Schmidt (Czecho-Slovakia), Dr. Jansen (Denmark), Dr. Forestier (France), Dr. Fortescue Fox (England), Dr. van Breemen (Holland), Dr. Kahlmeter (Sweden), Dr. Kornmann (Switzerland), a member from Germany to be subsequently added.

An invitation was accepted to hold the next annual meeting of the Society in Italy in October, 1927, on the occasion of the inauguration of the State Medical Service at Monte Catini.

### *International Discussion on the Ætiology and Treatment of Rheumatism.*

Sir William Willcox, in introducing the discussion, developed his well-known view that all forms of chronic rheumatism, articular and non-articular, were produced primarily by septic infection. He admitted many other possible factors in causation, "but," he said, "the contention that any of these can be considered as a main cause of rheumatism cannot be regarded seriously." Even faulty metabolism and endocrine disorders must be looked upon as results of the toxæmia of infection. Sir William Willcox avowed himself an ardent believer in the hydrological treatment of rheumatism after the infective condition had been dealt with, and especially commended intestinal lavage. Stimulation of the general immunity of the body was helpful. Dr. Mougeot, criticising the infective theory of rheumatism and arthritis (these words have a differing connotation in France), said that among latent infections in the arthritic diseases that of the colon occupied in his opinion the chief place. Hepatic insufficiency was also an important ætiological factor, causing a deficiency in oxidising ferments. Hence, probably the value of sulphur waters in rheumatism, for sulphur powerfully augmented oxidation. A third factor in arthritis, especially in middle life, was endocrine deficiency, and trophic changes suggested a nervous element in many cases.

Dr. van Breemen said that the scientific study of rheumatism during the last 30 years had led to a cul-de-sac, mainly as a result of the dominance of pathological-anatomical conceptions and of the classifications arising therefrom. Four separate factors, in his opinion, made up the causation of rheumatism, operating in different degrees in different cases. He suggested that these four factors should be especially studied at all clinics for rheumatic patients: (1) Focal infection and local reactions; local temperatures to be investigated, and evidence sought by blood investigation, &c., of the connexion between focal infection and rheumatic disease. (2) The arthritic diathesis; a study of metabolism, autonomic nervous system, condition of the blood, fatiguability, &c. (3) Derangements in the circulation of the skin. An exact measurement of skin temperatures is required. (4) Reaction to external physical conditions; the influence of heat and cold, dry and moist, as well as occupation to be more exactly studied. Dr. van Breemen regarded chill from exposure to damp cold as an important factor in many cases and advocated external methods of treatment for all forms of chronic rheumatism.

Dr. Kahlmeter, medical consultant to the Board of Pensions in Sweden, said that four special institutions for chronic rheumatic (articular) cases had been set up by the Board. The investigation of results, three years after treatment, showed 60 per cent. of cases at least so far recovered that they were able to maintain themselves; another 18 per cent. improved sufficiently to make a pension unnecessary, and 23 per cent. pensioned. The results were always better in men than in women. Among the different forms of arthritis the "secondary chronic articular rheumatism" (following rheumatic fever or slightly febrile cases) has shown the best results. The non-febrile "rheumatic arthritis" shows somewhat less good results, although this form never has cardiac complications. (A radical distinction is here evident.) Non-articular rheumatic cases (not included in the Swedish statistics) do very favourably at the institutions, about 84 per cent. being reported in good health after three years. Dr. Kahlmeter strongly advocated the provision of special departments for subchronic arthritis in the chief hospitals. Such cases were too protracted for ordinary hospitals and many of them were not yet ready for the spas or institutions under the Pensions Board where baths and other physical treatment were provided. A similar provision (with special departments) was required for crippled persons in Sweden. The Pensions Board was building a rheumatism department at four of the provincial hospitals but still lacked "the most urgent thing," a central arthritic hospital in Stockholm, in connexion with the university, with facilities for special research and teaching in rheumatism. Dr. J. Alison Glover gave figures and diagrams from the British Ministry of Health, exhibiting the nature and extent of the problem of rheumatism in England, to the importance of which the national conscience was being awakened. If only one-quarter of the cases which annually presented themselves in England and Wales required hydrological treatment, some 14 spas such as Pistany, which had 800 beds for insured persons, would be necessary. He agreed with Dr. van Breemen as to the occupational factor in causation, and showed the incidence of osteo-arthritis among metal workers and the influence of climatic peculiarities in the development of rheumatic disease. Prof. Netousek (University of Bratislava), Drs. Schmidt, Wasserman, Higgins, and Poulton also took part, and Dr. Schober emphasised the powerful causative influence of climate, age, and traumatism in most rheumatic affections.

## THE GERMAN SURGICAL CONGRESS.

(FROM OUR OWN CORRESPONDENT.)

AFTER the inaugural proceedings already reported in THE LANCET (April 24th, p. 882), an address was delivered by Prof. A. EISELSBERG (Vienna) on some problems in the

### *Surgery of the Brain and Spinal Cord.*

Nowadays, he said, the surgeon had to operate upon every part of the brain except the pons and the medulla oblongata. The essential was accurate diagnosis. Radiography might be of value to ascertain the condition of the sella turcica and the pterygoid process, but encephalography had not had the effect which was expected and he preferred a probatory exposure of the brain. The results of operation on cerebral growths were not yet as good as they ought to be, although technique and diagnosis had been greatly advanced by Harvey Cushing. In a series of 161 cases 98 of the operations had been successful, and of the last 31 cases only three had died. Growths of the acoustic nerve, according to recent researches, were not of a malignant character and radical removal was therefore unnecessary; the post-operative administration of X rays was of value in treatment. Lumbar puncture, though dangerous with cerebral tumours, should always be performed in growths of the spine. By injections of lipiodol into the cisterna suboccipitalis morbid conditions and growths of the spine became visible. Of 89 growths of the spine 84 were cured by operation. In inoperable tumours administration of X rays produced improvement.

Prof. F. **KRAUSE** (Berlin) spoke on the operative treatment of epilepsy. He said that in Jacksonian epilepsy it was essential to observe the fits. Sometimes a fit apparently began with convulsions of an extremity, whilst accurate observation showed a spasm of the ocular muscles. In such a case it would be a mistake to operate upon the ascending cerebral convolution. In the case of a child where only a very short rotation of the right eye had preceded the fits, these disappeared after a subcortical cyst had been removed from the motor centre of the eye. In genuine epilepsy operations were as a rule useless; only in cases beginning with typical local symptoms might surgical intervention be considered.

Dr. **GULCKE** (Jena) read a paper on Neuromata, of which he described three forms—the first occurring from the brain, especially the acoustic nerve, the second in the medulla, and the third in the peripheral nerves and especially the sciatic.

### *Operation for Bronchial Asthma and for Mitral Stenosis.*

Prof. H. **KÜMMEL** (Hamburg) reported on the results obtained by cutting through the bronchial nerves in asthma. Operation had been done only in cases where other treatment had failed and where the patients could not get rid of the habit of morphia or adrenalin injection. He stated that he had cured the patient in 50 per cent. of cases. In the last case, to avoid undesirable consequences, he had cut through the rami posteriores bronchiales; the operation was somewhat more difficult but was more satisfactory.

Dr. **PRIBRAM** (Berlin) reported on a case of stenosis of the mitral valve due to articular rheumatism 23 years ago. After resection of the left costal cartilages the sternum was divided and after the pericardium had been opened a die-like instrument was introduced into the heart and pushed to the mitral valve, from which a triangular piece was punched out. The hæmorrhage was only slight; the result was that the low blood pressure at once increased. The patient unfortunately died after five days, high fever having set in. Autopsy showed that endocarditis had relapsed at the aorta, producing stenosis there.

### *Operation for Acute Peritonitis.*

Prof. M. **KIRSCHNER** (Königsberg) has collected the history of 10,000 cases of acute peritonitis from the Königsberg and other surgical clinics. The mortality from operation is very high until the fifth year of age, decreases then to the fiftieth, and rises again thereafter. The percentage mortality further depends on the day on which the operation is performed, being 25 when the patient is operated on within the first 12 hours, 32 within 12 to 24 hours, 45 from 24 to 48 hours, and 66 after that time. It follows that every case ought to be operated on at once. To remove the source of the infection the incision must be made long enough to allow full exposure. For removing the exudate irrigation with saline should be done; when only a small quantity is present mopping is sufficient. No compound should be used for the purpose. If the surgeon is sure that he has removed the source of the infection, a suture of the abdominal wound should be performed; if not, the source of the infection and the pouch of Douglas may be drained. The action of the heart must be accurately observed as it suffers very early from the effects of infectious peritonitis. Indiscriminate injection of digitalis and suprarenin must be avoided; injections of morphia to strengthen the heart give good results. Working on these principles, said Prof. Kirschner, the mortality from acute peritonitis had decreased within 30 years from 87 to 30 per cent.

### *Operations on the Colon.*

Prof. O. **NORDMANN** (Berlin) said that radiography showed that there was not only a peristaltic but also an antiperistaltic movement in the colon. Congenital atresia and stenosis were not due to fœtal peritonitis, but to an arrest of development. In these cases, he said, the only suitable operation was the making of an artificial anus above the constriction. Torsion of the cæcum must be operated upon early. In a healthy cæcum retorsion was sufficient; when gangrene had occurred resection of the cæcum together with the ascending colon was necessary. Megacolon was also a congenital condition and was sometimes associated with an enlargement of the urinary bladder. It generally caused symptoms only when kinking had occurred. If irrigation proved useless cæcostomy was preferable to the formation of an artificial anus. In weak patients and in young people operation should be done in two stages. Radiography had proved that diverticulitis was more frequent than had hitherto been believed. In uncomplicated cases resection in one stage was possible, but in complicated the formation of an artificial anus was indicated. Innocent growths such as lipoma and polypus produced symptoms only when they had caused invagination. Cancer of the colon might exist without the blood appearing in the fæces. In cancer of the ascending colon the whole ascending colon with the hepatic flexure must be removed, and an anastomosis made between the ileum and the transverse colon. In cancer of the flexure resection, as extensive as possible, must be performed, and in people with cardiac weakness this had to be done in two stages.

Prof. **SCHLIEBEN** (Frankfort) drew attention to the fact that sometimes polypi of the intestine enclose typical precancerous cells. He therefore insisted upon an accurate microscopical examination of every polypus. The pedicle of a polypus might be formed by innocent tissue, but in another part of the growth cancerous and transitional cells might be present.

### *Transplantation of Cancer.*

Dr. **KURTZAHN** (Königsberg) reported that he had transplanted into himself cancerous tissue removed from the breast. The results were quite different from those obtained in experiments on animals. At examinations made after six days, two weeks, and six weeks only signs of absorption were discovered.

Amongst other papers read before the Congress were those by Prof. L. **REHN** (Düsseldorf) on Constitution from a Surgical Point of View; Prof. **BAYER** (Leipzic) on Transplantation of Joints; Prof. **KOCH** (Bochum) on the Results of Primary Sutures of Complicated Fractures; Dr. **LAHR** (Kiel) on Ischæmic Contractures; and by Prof. E. **JOSEPH** (Berlin) on the Removal of Calculi from the Ureters.

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**HOSPITALS AND ACCIDENTS.**—The Royal Victoria and West Hants Hospital at Bournemouth has made a rule that any person admitted as the result of an accident who is covered by any form of insurance shall pay 10s. per day for maintenance during his stay in the hospital.

**NATIONAL HEALTH INSURANCE: CERTIFICATES BY NON-PANEL PRACTITIONERS.**—A medical practitioner, who was not a panel practitioner under the National Health Insurance Acts, was asked by a panel patient, who was his private patient, to give a certificate to enable him to obtain medical and sickness benefits from his approved society. The doctor furnished the appropriate certificate and was later informed by his patient that the secretary of the local branch of his approved society had refused to accept this certificate on the grounds that it had not been given by a panel practitioner. The doctor brought this matter to the attention of the London and Counties Medical Protection Society, whose secretary informed him that no approved society was entitled to refuse a proper certificate even though given by a non-panel medical practitioner. The facts were reported to the Minister of Health, who endorsed the advice given by the Protection Society and caused a communication to be made direct to the head office of the approved society concerned.

## PARIS.

(From our own Correspondent.)

### *Further Light on the Tubercle Bacillus.*

Since its discovery Koch's bacillus has been generally regarded as an acid- and alcohol-fast organism growing only at relatively high temperatures and in rich and nitrogenous media, and it has been assumed that the demands it makes on its environment necessitate a parasitic habit of life. Dr. Albert Vaudremer, however, has recently shown that the characteristics of the tubercle bacillus which are usually thought of as absolute are really only relative. It appears from his investigation that the bacillus passes through various stages in development from its original granular state into its ultimate acid-fast form. At different times in its life-history it is able to thrive in different kinds of environment and at temperatures ranging from 15° to 39° C. It develops in media containing only traces of nitrogen and of salts, and at this stage it is not acid-resisting, and does not produce tuberculin; for the production of tuberculin is only possible in a medium rich in nitrogen, and resistance to acid is only developed in cultures containing large amounts of carbohydrates and in the presence of plenty of oxygen. Such conditions are realised in parasitic life, and it was this that led Koch to describe the tubercle bacillus as necessarily parasitic. But in reality it is only the acid-resisting form—the infectious germ—which is necessarily parasitic, and this germ, which is composed of granular elements, has particles which can pass through a porcelain filter and on subcutaneous injection into guinea-pigs can produce lesions comparable to those of surgical tuberculosis in man; on intravenous injection of filtrate a rapidly fatal septicæmia is induced. His observations led Dr. Vaudremer to attempt vaccination of guinea-pigs by subcutaneous injection of tubercle bacilli grown on potato broth without glycerine and killed by heat at 59° C. For 15 months after such vaccination the guinea-pigs resisted infection and reinfection with doses of tubercle bacilli which, according to experience, should have proved fatal within 60 days.

### *Denervation of the Ovary.*

Investigations made by Dr. Jean Lhermitte and Dr. Robert Dupont (both of Paris) of 16 cases have shown that the nerves to the ovary are specially abundant in the central region of the hilum, that they do not follow the vessels, and that on entering the ovary they lose their sheath of Schwann. Histological and anatomical research led them to attempt the relief of the painful symptoms of sclerocystic oöphoritis by denervation of the ovary. This operation has been done nine times, and, although the experiment is only recent, it is not too much to say that the results are encouraging and justify further trial.

### *Botelho's Sero-reaction for Cancer.*

Prof. Hartmann lately gave a demonstration before the Académie de Médecine of the sero-reaction devised by his pupil Botelho, who has been doing research on cancer at the Hôtel-Dieu for several years. The reaction, which seems to depend on a precipitation of albuminoid substances in determined conditions, is shown to be positive in 90 per cent. of cancerous patients and in only 14 per cent. of the non-cancerous; the fact that the serum of pregnant women often gives a positive reaction is noteworthy. On complete extirpation of a new growth or after effective treatment with radium or X rays, the reaction again becomes negative, which is interesting as showing that it does not depend on a diathesis, but rather on the formation by the tumour of substances which circulate in the blood. This hypothesis has been confirmed by Itchikawa who produced experimental cancer by painting the rabbit's ear with tar, and found that Botelho's reaction became positive in the rabbit's blood as soon as the cancer became definite.

### *Surgery and Latent Tuberculosis.*

Bezançon and Jacquelin[1] consider that among the causes which reactivate tuberculous infections dating from childhood, and give rise to pulmonary tuberculosis, surgical intervention plays a definite part. Here they are not referring to tuberculous metastases following operations on tuberculous lesions, but rather to the development of pulmonary tuberculosis following operation on organs free from all tuberculous infection. From their study of seven such cases in the last two years, they have come to the conclusion that the anæsthetics which have the most decidedly reactivating influence on the tuberculous lesion are also those which are most damaging to the liver cells; and they say that the systematic study of the cutaneous reaction to tuberculin establishes the existence of a fairly definite state of post-operative anergy. The moral of their research is that patients suspected of tuberculosis should not be operated on if it can be avoided, and, if operation is imperative, the least toxic anæsthetic should be used. In this respect local or spinal anæsthesia or even nitrous oxide gas are very much less harmful than chloroform or ether.

### *Bread and Flour.*

The President of the Republic has signed a decree requiring the addition of 8 per cent. rye flour to the wheat flour used for making bread in France. The rye may be replaced by rice or barley in regions where rye is scarce. French household bread will thus resemble very closely the same class of bread used in Switzerland before 1914, when the supply of rye from Central Europe was cut off.

### *Injections of Oxygen for Hydrarthrosis.*

De Mello, of Lisbon, reports that local injections of oxygen act more surely and rapidly than massage in curing hydrarthrosis of the knee due to trauma. Twenty-seven cases have been treated and not more than three injections were required in any of them. At each injection about 300 c.cm. of oxygen is introduced between two rubber bands placed above and below the knee in such a way that the gas accumulates between them.

Bonnet reports that butelline (sulphate of para-amino-benzoate of di-n-butyl-amino-propanol) is excellent for anæsthetising the mucosa of the uro-genital tract. Solutions may be of 1, 2, or 4 per cent. The substance replaces cocaine, for it is very stable, may readily be sterilised, and does not seem to produce toxic effects.

Following the recent death of an intern at the Bicêtre Asylum from scarlet fever, French physicians are considering the provision of better protection and compensation for hospital doctors. So far free treatment in hospital has been the only benefit accorded to those who suffer in the course of their duty, and medical men are not included in the compensation and indemnity regulations of 1898.

The figures for the Census taken in Paris on March 7th are now available. The population on that date was found to be 2,838,416, which is about 25,000 less than it was five years ago.

The seventh international meeting organised by the Paris Society of Neurology will be held at the Salpêtrière on June 1st and 2nd. The principal subject of discussion will be the present clinical methods of examining the sympathetic. Information may be had from Mr. O. Crouzon, 120, Boulevard St. Germain.

Two courses in oto-rhino-laryngology will be given this summer. From June 21st to July 3rd a course will be held at Bordeaux, information about which may be had from the Secretary of the Faculty of Medicine. The other is from July 5th to July 13th at Toulouse; details are supplied by the Secretary of the Faculty of Medicine there.

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[1] Vide Paris Médical, March 27th.

A post-graduate course in dermatology will be held at the University of Strasbourg from Sept. 20th to Nov. 6th. Applicants should write to Prof. Pautrier, 2, Quai St. Nicolas, Strasbourg.

The death is announced of Dr. Amand-Elzéar Gauthier at the age of 76. He was senator for the Aude and was three times Minister of Public Works.

## IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *Local Appointments.*

THE Minister for Local Government and Public Health introduced to the Dail recently a measure designed to make a radical change in the method of appointing the officers of local authorities. It deals not only with the officers of county, county borough, and district councils, but with agricultural, technical instruction, and school attendance committees. The Bill provides that in future such local authorities shall only appoint to offices on their staffs persons already in their service, or in that of other local authorities. In other cases the appointment is to be made by the Minister—of Local Government and Public Health or of Agriculture or of Education, as the case may be—acting on the recommendation of a body of not more than three Local Appointments Commissioners, who are to be appointed by the Executive Council. In making their selection the Commissioners are to act "solely by means of competitive examination," and they are empowered to draft regulations to govern such examinations. This mode of selection, however, will not apply in cases in which the Commissioners consider that candidates could not be satisfactorily selected by competitive examination in view of the knowledge, experience, or qualifications required for the post. In such case the Commissioners may make their selection in any way they think fit. A marginal note suggests that this exception is meant to apply to offices whose duties are of a professional or technical nature. As the Bill covers all appointments of medical officers under local authorities, it is of great interest to medical men. In removing the patronage of such officers from local authorities it tends to remove one of the great obstacles to the establishment of a State Medical Service. It would be satisfactory, however, to see more precise conditions laid as to the procedure to be employed by the Commissioners in dealing with professional appointments.

### *The Coroners Bill.*

It is understood that the Coroners Bill at present before the Senate has undergone important changes in Committee. The principal additions are as follows: A coroner's jury shall be composed of not fewer than six or more than 12 persons. The fee of a special expert witness is fixed at £10 10*s*., plus certain expenses of attendance. The present fee payable to a practitioner for giving evidence at an inquest when no post-mortem examination has been made is £1 1*s*. In the new Bill the Select Committee has altered the sum to "not exceeding £2 2*s*." The fee for making a post-mortem examination, and reporting to the coroner without giving evidence is altered in the Bill from £1 11*s*. 6*d*. to "not exceeding £3 3*s*.," and the fee for a post-mortem, report, and evidence is increased from £2 2*s*. to "not exceeding £4 4*s*."

### *The Dublin Hospitals and the Rockefeller Foundation.*

There have been for months past a number of rumours current in Dublin regarding applications said to have been made to the Rockefeller Foundation for funds to build an amalgamated hospital. Last week Sir William Taylor, in a speech at Sir Patrick Dun's Hospital and in a letter to the daily press, stated the facts. The boards of governors and the medical staffs of five hospitals—Dun's, Mercer's, Meath, Adelaide, and Royal City of Dublin—are agreed upon the principles of amalgamation if the necessary money for the accomplishment of the project should be forthcoming. Sir William Taylor, as chairman of the committees of the amalgamation scheme, asked the representative of the Rockefeller Trust, who visited Dublin last year, for the sum of £1,250,000, a sum equal to that given to University College Hospital some three years ago, and requested that of that sum about 40 per cent. might be expended on building and equipment—conditions similar to those under which the University College grant was given. No answer has yet been received, and a representative of the Rockefeller Foundation is to visit Dublin in the autumn of this year. A statement has been made that the Rockefeller Foundation has delayed considering the application in view of the uncertainty of the relation of Ireland to the Medical Register, but no such reply has reached Sir William Taylor.

### *Professorships at the School of the Royal College of Surgeons in Ireland.*

The President, Vice-President, and Council of the Royal College of Surgeons in Ireland have made appointments to three of the vacant chairs in the School of the College. Dr. George E. Nesbitt has been appointed professor of medicine; Dr. Andrew H. Davidson, professor of midwifery and pharmacology; and Dr. Leonard Abrahamson, professor of pharmacology. The appointment to the chair of physiology will be made next month.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

### *Births and Deaths in Madras.*

IT is at present impossible to compile really accurate vital statistics in India owing to the difficulty of securing the registration of births and deaths. In the Madras Presidency no less than 63,785 unregistered births were brought to light by the district health staff during 1924, and it is certain that even this number does not represent anything like the total. The number of births registered in that year was over 1,400,000, which was an increase of 72,000 over the figure for 1923, and represented a birth-rate of 34·9 per 1000 instead of 28·8 for the previous five years. The increase is evidence of the vigilance of the district health staff. Deaths numbered slightly more than 1,000,000, which was also a slight increase; the death-rate in municipalities increased from 20·7 in 1923 to 32·2 in 1924. About 52,000 deaths from cholera were registered, as compared with 5000 in the previous year, and the figures for diarrhœa and dysentery rose in similar fashion. The diseases were widespread, but most of the festivals passed off without untoward incident, so that the trouble and expense involved in their sanitary management seem to have been justified. The Director of Public Health is able to report that the people themselves rendered considerable service to the health staffs and a large number of prophylactic injections against cholera were given. Small-pox mortality declined by over 6000, the total number of deaths in 1924 being not quite 10,000. Plague gave little trouble, but under the heading Fevers no less than 322,000 deaths are reported, and a large proportion of these is doubtless due to malaria and, in municipal towns especially, to typhoid.

Madras Presidency has a provincialised cadre of district and municipal health officers and there is no longer a lack of candidates for appointments. It is clear that local bodies have begun to realise the advantages of having such officers, and, as the Government pays 75 per cent. of their salary, very little additional expenditure is incurred for them in the municipal budgets.

### *The Medical Profession in India.*

An interesting, if sombre, account of the present position of the medical profession and medical research in India was given to the Indian Science

Congress in the presidential address[1] of Colonel Raghavendra Row. The profession, he said, consisted of a heterogeneous mass of members who were, unfortunately, marked off into watertight compartments, as was perhaps natural in a country where the caste system permeated every institution. First there was the small number of men belonging to the superior services, who were chiefly members of the Indian Medical Service transferred to the civil side; next there was a large body formed of two distinct classes of the subordinate service—the assistant surgeon class, drawn from university graduates, and the sub-assistant surgeon class trained in the medical schools; lastly, there was a very large body of private practitioners. There was an official side and a non-official side, with various grades, "and each with its own vested interests." And all these were called upon to serve a vast mass of uneducated and unappreciative humanity, without the basis of one common interest and ideal such as guided the profession and the public in England. In spite of the strenuous and most earnest efforts of the senior members of both official and non-official sections, said Colonel Row, there was a conflict of classes and individuals which inevitably prevented cohesion and the formation of a corporate profession. Unfortunately, even those private practitioners who were inclined to undertake post-graduate work generally confined themselves to clinical study, forgetting the importance of research. Those who went abroad seemed to be drawn chiefly towards the acquisition of high-sounding degrees which ensured a lucrative practice on their return to India. The scientific atmosphere did not exist. The attitude of the public towards the profession was lamentable; it was difficult to awaken the public conscience of the wealthy classes to their duty towards the less fortunate poor, and to interest the general mass of the public in the finer shades and different functions of the various branches of the profession and their comparative importance in the growth of medical science was out of the question. Outside the five or six Government laboratories, staffed mainly by the I.M.S., which were doing admirable work, research was practically dead and the outlook for the future unpromising. "The standard of teaching and training in Western medicine," Colonel Row said, "is rapidly falling. The students are too illiterate to understand what they are taught; the teachers too inexperienced in teaching to be able to train men in the early stages of their professional teaching. . . . . Examinations are no longer run on honest lines." He deplored the threatened decadence or disappearance of the I.M.S. which, he said, had founded the medical colleges and directed medical education, having always given of its best. What must be done was to build up a substitute service not only of equal accomplishments, versatility, and distinction, but based on a much broader and cosmopolitan policy of selection purely with a view to efficiency. For this purpose material, money, and men were needed. India was unrivalled as a field for the medical investigator; money ought to be obtainable and support had already been received from the trustees of the Rockefeller Foundation. The supply of men was the main difficulty. Expert advice must be imported at whatever cost. No matter what political goal was in view for India, there must be not only a well-organised profession, but also the machinery to ensure the continuous production of men capable of undertaking by themselves the solution of the scientific problems of the country.

### *Propaganda and Health.*

In a report on India in 1924–25 Mr. Rushbrook Williams, Director of Public Information, speaks of the need of an organised public opinion to overcome the deadweight of age-old inertia. Organisations such as the Servants of India Society and the Social Service League are doing admirable work, and if only India could be covered with a network of similar organisations the sanitary problem, he says, would be solved in no long period. During the last ten years much has been done to improve the sanitation of the larger towns, but progress is always very slow, as deep resentment is excited by interference with customs of long standing. In consequence, sanitary regulations are all too commonly proposed with timidity and reinforced without zeal. So far as rural sanitation is concerned the position is even less satisfactory and an immense effort is needed. Public health departments all over India are now organising propaganda work in rural areas and the coöperative movement is displaying its potentialities in this, as in other fields.

One of the most urgent problems is the supply of even elementary medical assistance to the remoter parts of the countryside. The Government of Bombay has sanctioned a village aid scheme for the training of selected primary school teachers in the rendering of simple medical aid. The Madras Government has announced a scheme for subsidising private practitioners to take up work in newly established surgical centres where medical aid is at present not available. By this and similar means it is hoped gradually to bring advanced medical aid within the reach of every locality.

Another instance of the successful use of propaganda is afforded by the movement known as the National Baby Week, which was initiated by Lady Reading and has caught the imagination of large sections of the people all over India. Infant mortality is among the most pressing problems of Indian public health. Probably every year some 2,000,000 Indian babies die within the first year of life, the death-rate varying from 200 to 600 per 1000 births. It would be difficult to exaggerate the practical importance of the infant welfare movement. The baby shows, which are held annually in all the most important centres of India, have aroused public interest to an unprecedented degree. Year by year the number of towns and villages applying for assistance in organising a baby week increases, and there is an ever-growing demand for leaflets, pamphlets, model lectures, cinematograph films, and magic lantern slides. Various voluntary associations and institutions have thrown themselves with enthusiasm into the task of furthering this campaign, but the scope for child welfare work is so extensive that many years must elapse before the problem can be pronounced as on a fair way to solution.

It is noteworthy that during 1924 nearly 34,000 lectures on health matters were delivered in over 27,000 centres in the Madras Presidency. About 1,500,000 people were thus addressed, and as many as 51 exhibitions were arranged at fairs and festivals.

### *Adulteration of Ghee.*

During a discussion in the Council of State the adulteration of ghee (clarified butter) with vegetable oils was admitted to be widely prevalent. It was stated that the large increase in the import of vegetable oil was due to the demand for ghee far outrunning the supply; vegetable oils were needed to make up the deficiency. Fat taken out of animal carcasses is also used to adulterate ghee. The Government speakers considered the imported vegetable oil to be wholesome, but it is devoid of the vitamins in which clarified butter is rich.

The Bengal Council has passed a resolution making physical culture compulsory for students between 12 and 18 years of age in all schools affiliated to the Calcutta and Dacca Universities.

A Bill to control medical education throughout the Indian Empire has been introduced into the Legislative Assembly. At present there is no Imperial measure but there are individual medical Acts for each province.

The rapid extension of Indian universities is leading to financial difficulties. The University of Lucknow, for example, has shown a deficit in its budget for the past five years owing to the insolvency of some of those who promise subscriptions.

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[1] Indian Medical Record, February, 1926.

# Public Health Services.

## MENTAL HOSPITAL REPORTS.

THE *City of London Mental Hospital* at Stone, Dartford, had 783 patients under treatment during 1925, and of these 65 were discharged recovered or relieved. The death-rate for the year was 6·4 per cent. Nineteen voluntary boarders entered the hospital during the year and eight remained in residence at the time of the report. Parole was granted to 94 cases and leave of absence on trial to 78. Parole patients can make full use of the library which has been equipped for the use of patients and staff. The new operating theatre, X ray room, pathological laboratory, and isolation block for noisy patients are all nearing completion, and should prove important and valuable additions to the accommodation of the hospital. Eleven male and five female nurses hold their mental certificate, and the appointment of a sister tutor is under consideration.

The report of the *Inspector-General of the Insane for Victoria, Australia*, for 1924 has recently appeared in print. There are over 6000 certified persons in the State, a ratio of 1 : 268 of the population. The female cases are on the increase, but the male figures are decreasing. The mean age of admission to the State hospitals was 43·5 years, and over one-sixth of the cases were more than 60 years of age. There were 41 cases of general paralysis—half the number admitted 15 years ago—and the Inspector considers that there is a marked diminution of active syphilis in the community. There was a general discharge rate of 50 per cent. and death-rate of 7·97 per cent. Post-mortem examinations were performed on three-quarters of the fatal cases. There are nine institutions; the patients from Yarra Bend have been evacuated to Mont Park, save for some 50 male patients who keep the farm and garden going. Kew is uncomfortably overcrowded with over 1000 patients, and the report echoes a plaint common in the reports of this country—viz., that mental institutions ought not to be filled up with senile patients. There is also at Kew a colony for mental defectives where nearly 400 patients are accommodated. Ararat and Beechworth are smaller hospitals with about 600 cases. At the latter, as at Kew and Yarra Bend, there were cases of typhoid, and colitis is always present owing to the absence of proper sewering. At Sunbury there are 1000 patients, and the superintendent believes in giving the utmost possible amount of liberty to all cases who are not completely demented. At Ballarat there are between 600 and 800 patients. Royal Park has a receiving house through which over 700 cases passed during the year; 400 had to be certified, while some cases of confusional insanity and recent mania and melancholia recovered. The superintendent states that "effective treatment and classification are impossible under the conditions of overcrowding which has become chronic." 400 cases were under care at the mental hospital, including a number of voluntary boarders. The voluntary clause appears to be abused here, as in America, and used chiefly by inebriates who make no real attempt to regain self-control. At Mont Park, after the transfers from Yarra Bend, there were 800 cases. The military patients have been removed from Mont Park, leaving that hospital almost unique in having adequate accommodation on its male side. A home for the tractable, bedridden, and sick military mental patients has been opened at Bundoora. A whole-time visiting dentist has been appointed and visits Royal Park, Kew, Sunbury, and Mont Park. He treated nearly 800 patients during his first year and hopes, when he has overtaken the accumulation of work awaiting him, to undertake research into the association of mental and dental defects. The impression given by the report is that the mental hospitals of Victoria are not in a satisfactory condition. Every superintendent speaks of unmade roads, insufficient accommodation, inability to obtain nurses, and the need of works and renovations which have long been recommended but never supplied. Three institutions are without water-borne sewage and two without recreation hall for dances, entertainments, or religious services. There is one pathological laboratory—at Royal Park—but the time of the pathologist is largely taken up with post-mortem examinations of which he performed 223 during the year, many of them on senile patients. In no other country or State is it necessary to have post-mortem examinations by a special officer on every patient reported to the coroner, and this practice deprives the pathologist of opportunities for research. He has, however, published papers on Mongolian idiocy and epiloia. The State of Victoria appears to be carrying economy too far.

The *Boston Psychopathic Hospital, U.S.A.*, is in the forefront of up-to-date and enlightened psychiatric work. Ten reports from different departments are included in the pamphlet. The director makes his subject vivid by giving brief paragraph reports of illustrative cases. Less than 100 patients were actually in the institution at the close of the year, but another 60 were still on the books and nearly 2000 had been given advice or treatment in clinics during the 12 months. Pathological investigations centred largely around the problems of endocrinology and basal metabolism. Of particular interest are the schizophrenic group, which show low basal metabolism without other evidences of hypothyroidism. Other lines of research include blood-sugar, the Kottmann reaction, the cardio-ocular reflex, the protein and sugar content of the cerebro-spinal fluid, and the puerperal psychoses. The resident dentist saw 1025 patients, and 131 cases were examined by X rays. The out-patient department sees every variety of psychopathic difficulty, the majority of the cases being referred by physicians, courts, social agencies or other hospitals; 15 per cent. were diagnosed as psychotic and another 15 per cent. as feeble-minded. The psychometric examination system continues to work well. The distinctive tests of the Kuhlmann scale have been organised into a test series and one worker has standardised a simple test of manual dexterity. The neuropathologist performs autopsies in various hospitals which have no pathologist, and has recorded three cases of pellagra and a series of statistics of the weight of the heart in cases of dementia præcox compared with its weight in other psychoses. A careful histopathological and histochemical record was made of a case of Westphal-Strümpell pseudosclerosis following erysipelas. The Department of Therapeutic Research has concluded that tryparsamide is a valuable addition to antisyphilitic drugs and has used and compared several methods of treatment for neurosyphilis, and has started investigations on some new tests for the cerebro-spinal fluid. The social service department and occupational therapy department are integral parts of the working of the institution. Every effort is made to suit the occupation to the ability of the patient and to get work out of him that he may feel proud of, whether it be winding yarn, bookbinding, or linoleum colour printing. A number of patients were referred from the out-patient department and were helped to bridge the difficult period of readjustment. In some cases the knowledge of craft work gained while in hospital paved the way for economic rehabilitation on discharge. The hospital claims with justice to be one of the world's finest centres of education in psychiatry for doctors, nurses, and social workers, and there is a constant stream of learners or junior helpers passing through its various departments. The director and his many assistants are to be congratulated on their ambitious and successful team-work.

The main note of the beautifully produced, illustrated, and indexed annual report of the *Besford Court (Pershore) Catholic Mental Welfare Hospital for Children* is one of relief that a strenuous year of tension and anxiety has been ended and that the changes foreshadowed in the last report have been successfully put into effect. Besford Court limits its

Dr. Robert [illegible]

activities to preparing for social life those higher grade feeble-minded children who are capable of living in the world and earning their keep, under occasional supervision through an after-care association. The superintendent discusses the various kinds of mental defects, the possible ways of dealing with them, and the inadequacy of existing institutions. He points out that although Besford Court has had to assume the name of "special residential school" in order to fall within official categories, yet it is intended for quite different children and works along different lines. He regards the large mixed institution as the best type for dealing with permanent institutional cases, but the worst for those children who are destined to return to society. Clockwork routine and the institutional spirit are fatal to a mental welfare hospital, and every effort is made to keep the "family" spirit supreme at Besford Court. An after-care scheme provides that old boys who find themselves in difficulties shall have somewhere to turn until smooth water is again reached. The report discusses the psychology of mental defect and the failure of routine education and "bogus" classes. Every trade taught at Besford is one at which the boy will be able to earn his living, and the managers decided on building as the best trade to make a start with. After six months' grounding in their subjects the boys were able to erect a bungalow. "Culture" classes—for want of a better name—alternate with the "vocational" classes, and the boys are encouraged by all the most modern methods to read and learn the general school subjects. The Montessori system is employed by the nuns who run the junior department. The usual summer camp was held at Lulworth, and 15 of the elder boys made the pilgrimage to Rome. A quasi-naval uniform and discipline was decided on, the livery of the senior Service being chosen because of its tradition of responsibility and initiative, and its association with transport and other constructive services to civilisation.

## SCHOOL MEDICAL SERVICE.

THE following table summarises the figures given in the school reports of Glasgow and Aberdeen:—

| Name of city. | No. on roll. | Av. elem. school attendance. | No. of routine children examined. | No. of special examinations and re-inspections. | Percentage of children found on routine examination requiring treatment.* |
|---|---|---|---|---|---|
| Glasgow .. | 183,853 | 87·9 | 48,275 | 37,032 | 48·6 |
| Aberdeen .. | Not given. | Not given. | 8,207† | 10,608 | 18·8 |

* Excluding uncleanliness and dental defects.

† This includes the cursory examination of 3066 entrants.

### *Glasgow.*

It is unusual nowadays to find the annual report of the S.M.O. for a large city given as an appendix to the report of the Director of Education. This arrangement leads to much of the medical work being described by a layman, with consequent loss of interest to medical men; whilst the S.M.O.'s report largely resolves itself into a statistical compilation from which little can be gathered of the actual working difficulties or of the schemes evolved to meet local conditions. Dr. E. T. Roberts shows that rickets is still the greatest single cause of crippling in Glasgow. Rickety deformity accounted for 21·8 per cent. of the recommendations for admission of children to schools for the physically defective, and marked rickets was found in 2·9 per cent. of the children in routine examinations. High as this figure still is, there has been a rapid and steady decrease from 4·1 per cent. in 1923 to 2·9 per cent. in the past year in spite of great industrial depression. Sixty-seven per cent. of the parents attended the medical inspections, and this close contact with the school doctors is rapidly bringing to the public generally the practical lessons of scientific knowledge. At the routine examinations in Glasgow the inspecting officer not only diagnoses but prescribes treatment and thus enables the ailing child to be at once dealt with at the minor ailment clinics. The numbers attending the clinics show a steady increase because parents are coming to realise the advantages of early treatment. Wide provision is made for the treatment of delicate children, and special classes, schools, and institutions are available for all classes of exceptional children. Interference with breathing, recurrent sore-throat, deafness, and otorrhœa were the indications tabulated before removal of tonsils and adenoids in 213 children. On examination, not less than six months after operation, it was found that 184 were cured, 28 were improved, and one showed no change. Two interesting tables are given, one showing that the physique of children examined varied almost strictly according to the number of rooms per family, and the other that the average number of rooms per family was lower in the present area in 1924 than it was in the smaller area of the Glasgow School Board in 1912.

### *Aberdeen.*

Dr. G. Rose gives facts and figures indicating that, though statements about the condition of the teeth of the community are disheartening, there are, nevertheless, gleams of hope. During the past ten years there has been gradual improvement in his area and enlargement of the dental staff is badly needed. The number of physically defective children in special schools is only nine, for many children who would in other districts be sent to such schools are retained in the ordinary schools—including apparently those with amputations and arrested tuberculous disease of the bones and joints, provided this is not made impossible by crutches or orthopædic apparatus. Dr. Rose notes the establishment of sounder views about the mentally defective. At first it was believed possible by intensive teaching to bring them to the level of their fellows, but it is now agreed that they cannot be educated along with the normal. On the other hand, it is recognised as an economic error to suppose that they do not need care, training, and special treatment, including special methods in dealing with delinquents. Dr. Rose insists on the curability of nocturnal enuresis and special treatment is given at the clinic. He maintains that cases of minor defective vision and hearing should be discovered by the teachers and placed in the front row of their class in spite of any administrative difficulties. We heartily commend this procedure even for areas where schools for the partially blind and for the hard of hearing exist. Slight defects of the sense organs, if unrecognised, may be a real handicap to education.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 8TH, 1926.

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 174 (last week 140); scarlet fever, 1426; diphtheria, 968; enteric fever, 37; pneumonia, 1034; puerperal fever, 51; cerebro-spinal fever, 9; acute poliomyelitis, 1; acute polio-encephalitis, 1; *encephalitis lethargica*, 41; dysentery, 2; ophthalmia neonatorum, 85. There was no case of cholera, plague, or typhus fever notified during the week.

In London itself there was notified no case of small-pox scarlet fever, 236; diphtheria, 273; enteric fever, 7; pneumonia, 96; puerperal fever, 8; cerebro-spinal fever, 1; encephalitis lethargica, 5; and ophthalmia neonatorum, 8.

*Deaths.*—In the aggregate of great towns, including London, there were 5 (3) deaths from enteric fever, 68 (23) from measles, 13 (2) from scarlet fever, 36 (2) from whooping-cough, 43 (12) from diphtheria, 51 (12) from diarrhœa and enteritis under 2 years, and 149 (23) from influenza. The figures in parentheses are those for *London itself.*

(The Registrar-General's weekly return has not yet been printed, and we are indebted to the Ministry of Health for these figures.)

# Correspondence.

"Audi alteram partem."

## CHOLECYSTOGASTROSTOMY FOR INACCESSIBLE GASTRIC ULCER.

*To the Editor of* THE LANCET.

SIR,—No conservative surgeon, I think, can have failed to be impressed with Mr. L. R. Braithwaite's article in your issue of May 1st, wherein he suggests that the best surgical treatment for inaccessible gastric ulcers may lie in anastomosis between the gall-bladder and the stomach.

I have been much exercised in mind as to what should be done in such cases, and am entirely in agreement with his view that gastro-enterostomy by itself is of little avail. This may be due to the fact that in cases of this kind it is often anatomically impossible to place the opening in the stomach on the cardiac side of the ulcer. Jejunostomy alone, without gastro-enterostomy, does afford rest to the stomach and a means of subsistence to the patient. I have recently referred in detail to cases treated in this way in my Hunterian lecture on the Surgery of the Jejunum. Clinical cure is not difficult to obtain. Mr. Braithwaite says that all his cases have relapsed. That is not my experience, and several of my patients have returned to arduous occupations without recurrence of symptoms. Nevertheless, I do not regard them as completely cured because X ray examination still shows either a bubble of air or a fleck of barium in the site of the old crater. But in any case this method of treatment cannot be popular, and is only put up with by those who have been martyrs to gastric pain. All my patients have yielded to temptation by the time six months has elapsed from the operation. Large resections for small ulcers do appear to be mutilation and large resections for large ulcers are often dangerous. If, therefore, nature offers the gall-bladder as a dock-leaf for the sting of an ulcer, gastric surgery may be simplified and rendered safer.

There appears to me, however, a slight inconsistency in Mr. Braithwaite's argument. He admits the hyperacidity of the gastric contents in duodenal ulcer, but states that no characteristic rise is found in gastric cases. Yet he claims that cholecystogastrostomy—his operation of choice for inaccessible gastric ulcers—reduces the gastric acidity. Does this mean that it requires something more than 0·2 per cent. of total HCl to produce a duodenal ulcer, but that a gastric ulcer patient is one whose mucosa won't stand even 0·2 per cent.? Of course, we do not know for certain whether hyperacidity is cause or effect as regards ulcer, though my experience of jejunal ulcers is that it is most likely to occur in patients whose gastric acidity remains abnormally high even after gastro-enterostomy. If such ulceration always starts, as Walton holds, at the anastomotic line, then technique is probably more concerned than hyperacidity, and the ulcer dates from the time of operation, mucosal healing never having been achieved.

It would be interesting to know whether bile enters the fasting stomach of the patient who is fed solely through a jejunal tube. So far I have made no observation on this point, but my impression is that reflux through the pylorus does still take place. This may be a factor in promoting healing together with the rest which the stomach enjoys. Mr. Braithwaite hints that it is possible to have clinical without chemical hyperacidity, but I think he should speak rather of hyperactivity. Alkalies may delay mobility as well as reduce acidity. The same may apply to bile in the stomach. The point which I am not clear about is the distinction he makes between gastric and duodenal ulcer and their treatment by "bilification." He suggests cholecystogastrostomy in stomach ulcer and cholecystoduodenostomy in duodenal ulcer, and yet Mr. Braithwaite considers that the operation attempts only a reduction of gastric acidity. Surely in the case of duodenal ulcer the anastomosis should still be with the stomach, and perhaps the ideal operation would be to short-circuit the pylorus and first part of the duodenum with a gastroduodenostomy, and also anastomose the gall-bladder to the stomach proximal to this. Such a procedure would probably be of wider application than an anastomosis with the gall-bladder placed between the pylorus and an ulcer which is rarely more than an inch distant from it.

In the case of gastric ulcer Mr. Braithwaite has suggested that a jejunostomy might also be advisable to secure rest for the stomach. Possibly with the addition of a cholecystogastrostomy to "bilify" the ulcer and to protect the jejunum the value of gastro-jejunostomy may be re-established. This would add greatly to the comfort of the patients concerned. In my experience of opaque meals after gastro-enterostomy it is rare to find that more food passes through the pylorus than the anastomosis, even years after the operation.—I am, Sir, yours faithfully,

Harley-street, W., May 5th, 1926. JOSEPH E. ADAMS.

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## CHRONIC DUODENAL AND GASTRIC ULCER.

*To the Editor of* THE LANCET.

SIR,—I have read with interest Mr. Braithwaite's paper in your issue of May 1st on the Surgical Treatment of Chronic Duodenal and Gastric Ulcer. He voices certain opinions which, as a student of gastric problems, I should be inclined to dispute, and notably among which I would include (1) his suggestion that any dyspepsia which has resisted medical treatment for two years and is not due to such general causes as phthisis is due to organic disease of the stomach or duodenum; (2) his observation that gall-stones never produce a painful dyspepsia; (3) his reference to hyperchlorhydria as if it were a disease in itself instead of a symptom; and (4) his apparent support of the view that gastric acidity is the more important factor in perpetuating ulcers. On none of these points, however, do I wish to join issue here, and all of them I have discussed elsewhere.

The sentence in his paper which particularly attracted my attention was the following:—

> "There are many surgeons who will not operate without a Rehfuss test—i.e., an estimation from hour to hour or less of the free acid in the stomach. The process of swallowing and keeping the necessary tube is much resented by most patients, and in my view, except as research on gastric secretion, is of small value."

I can only suppose that Mr. Braithwaite has had a very small personal experience of the fractional test-meal. Since 1910 I have had occasion to employ the fractional method as one among other routine methods of assessing gastric efficiency in many hundreds of hospital and private patients; it is employed as a routine both by physicians and surgeons at Guy's Hospital; Dr. T. Izod Bennett and I examined over 100 healthy medical students with the method, and I have had many test-meals myself for experimental purposes. The test is not very disturbing and, although few people would swallow the tube as a pastime, I have never heard any serious complaint from my patients; those who have had previous experience of the large stomach-tube usually prefer the small one, although it must be retained longer; and, finally, the test is, to say the least, a great deal more comfortable than many other diagnostic intubations such as œsophagoscopy and cystoscopy. The value of fractional analysis in the so-called "surgical dyspepsias," and especially in assessing the suitability of certain cases for certain operations and in studying their late results, to my mind, is very great. In the section of my Goulstonian lectures (1925) dealing with gastro-jejunostomy the following sentence occurs:—

> "In the light of modern experience it seems fair to insist that no gastric surgery other than urgent surgery should be undertaken for the relief of symptoms due to an active ulcer without a preliminary fractional gastric analysis as well as a radiographic examination."

To this opinion I adhere.

I should very much like to know how Mr. Braithwaite can justify his plea for new operations which greatly modify the physiology of the stomach, unless he is prepared to study the physiology of the stomach—otherwise than by the eye of faith—both before and after surgical intervention. If he is not prepared to do this he is exposing himself to the criticism that he has resorted to the old principle of "*trial and error*"—a principle which is hardly worthy of modern surgery. It seems to me unwise, on the experience of a single year and only 19 cases, even to hint that the operation of cholecystogastrostomy for inaccessible gastric ulcer "may become the operation of choice," unless he is taking steps (as I hope he may be doing already) to inquire what derangement of function, if any, is present before the operation; what modification of acidity and emptying rate is achieved by the operation; and what evidence there is that alkalinisation causes healing. Rehfuss's tube and the fractional test-meal would greatly help him in such inquiries.

It has taken a quarter of a century to discover the limitations of gastro-jejunostomy and to explain its sequelæ. Many physicians and surgeons even now are uncertain as to the absolute indications and contra-indications for the operation and the actual modifications of function which it produces. In the last few years I have collected clinical and test-meal observations on a group of cases illustrating six distinct and troublesome complications of gastro-jejunostomy. Should we not therefore be very cautious in our advocacy of new measures such as gastro-duodenostomy, gastrectomy, and cholecystogastrostomy, at any rate until they have borne the test of time?

I do not write as a physician opposed to the surgical treatment of gastric and duodenal ulcer. A large proportion of my ulcer cases are referred, after investigation and selection, to my surgical colleagues, but I do believe that we owe it both to our patients and our art to analyse as carefully as possible the reasons for our very responsible actions and the reasons why certain procedures, frequently very successful, are still followed, rather too frequently, by unhappy results. If we wish to introduce and perfect new reconstructive operations for the relief of gastric disease we must study our cases critically by all the established tests at our disposal.

I am, Sir, yours faithfully,
J. A. Ryle.
Wimpole-street, W., May 1st, 1926.

## WHAT IS ORTHOPÆDIC SURGERY?

*To the Editor of* The Lancet.

Sir,—My letter of April 3rd (p. 734) was prompted by a certain concern for the future of surgery. Mr. Elmslie will believe me that it was not dictated by any feeling of hostility to the specialty he so ably practises or to my personal friend and colleague who presides over the Orthopædic Section of the Royal Society of Medicine.

In reply to my question, "What is orthopædic surgery?" Mr. Elmslie gives three alternative definitions of its scope (The Lancet, April 24th, p. 884): (*a*) surgery, excluding certain large branches, notably abdominal surgery and the surgery of malignant disease (including, however, malignant disease of the bones); (*b*) the surgery of the bones, joints, muscles, and peripheral nerves: (*c*) the surgery of the limbs and spine.

I should like to point out that none of these definitions has any relation to the natural meaning of the word "orthopædic," and that the first covers more than half the field of surgery. I believe that in thus, at their own volition, extending the natural boundaries of orthopædics, orthopædic surgeons are weakening their position as specialists. If, as Mr. Elmslie says truly, it is impossible for one man to practise efficiently the whole of surgery, it is surely equally impossible for one man to attain the higher specialist skill over such a large part of that area as orthopædic surgeons now claim. For example, if bone tumours are removed into the field of orthopædics, and even Mr. Elmslie excludes other tumours from it, I doubt if these particular tumours will be as efficiently treated as by those who are familiar with malignant disease in all its forms.

There is, moreover, another aspect of this unfair extension of specialist claims. They amount in practice to an exclusive claim to the area thus fenced in. The general surgeon, who makes no exclusive claims for himself, is thus practically, though not formally, debarred from these areas because of the prestige attaching to the word specialist. Furthermore, as other specialties arise, each tending to enlarge its borders, the whole field of surgery will be divided into specialist areas, which, becoming contiguous, will proceed to overlap, and may finally coincide. In other words, the general surgeon will have returned under a specialist pseudonym, a result not dimly foreshadowed in Mr. Elmslie's letter.

It would surely be a misfortune of the first magnitude if surgeons broke up into competing specialist groups, each in fact practising general surgery but isolated from the other groups by a specialist designation. The exchange of criticism and of knowledge would be restricted and surgery would become a battle-ground of warring specialties. Mr. Elmslie feels that the field of orthopædics proper is too narrow. I suggest that the remedy for this cramped feeling is not the artificial extension of his specialty but that specialist appointments in orthopædics, which are undoubtedly necessary, should always be held in conjunction with a general surgical appointment. This should apply also to other specialties, but exception would have to be made for the eye, ear and throat, and for gynæcology.

The intensive study of particular fields of surgery by enthusiastic and able specialist groups has done much for surgery in orthopædics as in other departments and is a great constructive force. The indefinite extension of specialties will lead to disorganisation and anarchy; such, at any rate, is my belief. I would not presume to limit the range of the rivate activities of any surgeon, but I do think, for the reasons I have given, that specialists in council and in their public manifestations should confine themselves strictly within the natural limits of their specialty. The day when general surgery dies of inanition and when there is no common meeting-place for all those who practise it will be an evil one for our art. Personally, my view is that we should all be surgeons, without any adjective, though each of us may be known to specialise in some particular branch.

I am, Sir, yours faithfully,
W. Sampson Handley.
Harley-street, W., May 17th, 1926.

## THE ÆTIOLOGY AND TREATMENT OF CHRONIC RHEUMATIC DISEASES.

*To the Editor of* The Lancet.

Sir,—Having been precluded by the multiplicity of speakers from taking part in a recent discussion at Pistany, may I ask for space in your columns to express a British point of view a little different from that of Sir W. Willcox? Whilst believing in a determining *infective* factor in a minority of cases (a very small minority in the non-articular varieties), I regard the evidence of something like specificity in the *soil* as equally conclusive. Why do slight infections, traumatism, or exposure, to which we are all subject, evoke arthritis, fibrositis, &c., only in some individuals?

Men of large experience at the British spas, like F. G. Thomson at Bath, tell us that only a small proportion of cases of focal infection in teeth, tonsils, or urinary tract develop multiple arthritis. Dentists in large practice assure me that they have removed the teeth from numerous arthritic and rheumatic persons without any benefit. Dr. Tylor Fox informs me that, in South East Russia in 1917, the peasantry—

especially the young adults—were almost universally affected with pyorrhœa, although the teeth appeared to be in good condition. Very little rheumatism or arthritis was observed. They were an undernourished people in a time of scarcity, and in the best of times they led hard lives. Here it ought to be especially noted that extremely hot sweating baths were in general use among the population as in other parts of Russia. Rosenow is inclined to attribute the affinity of streptococci and toxins for the articular and periarticular tissues to failing nutrition and deficiency of oxygen in those tissues.

Why is a "cold in the head" followed in some persons by pan sinusitis? Why is influenza or pneumonia sometimes fatal in a few days? If some other factor than infection, some "specificity in the tissues," is at work in acute diseases, is it not equally present in chronic diseases? I submit that whilst treating ascertained sepsis in chronic rheumatism, as in other chronic maladies, we should never allow ourselves to follow a wild-goose chase after organisms, that we should remember that the governing factor in disease is not the presence of organisms but the power of resistance of the body to organisms, and especially that since chronic rheumatism, in some forms at least, has been proved to have a climatic distribution, we should endeavour in our treatment and prevention of rheumatism to compensate unfavourable climatic influences. My own conviction is that in many cases of rheumatism, as in tuberculosis, the best treatment is general and not local. At all events it seems rational that when the field of ætiology is wide we should try to advance along the whole front.

I am, Sir, yours faithfully,

London, W., April 27th, 1926. R. FORTESCUE FOX.

## HEALTH OF THE COAL MINER

*To the Editor of* THE LANCET

SIR,—My attention has been drawn to a leading article on this subject appearing in THE LANCET of April 10th. In the course of that article it is stated that:—

> "The mortality experienced by coal-miners is fairly low; yet the Lancashire miner, with the South Wales miner not far behind, has a mortality nearly double that of his fellow in the Nottingham area. *Now the Lancashire and South Wales miners have always manifested the greatest unrest as a class;* unrest in the industry appears therefore quite clearly as a psychological expression of ill being."

I can only suppose that this observation is based upon Table B in App. 32 on p. 326 of the Appendices of the Report of the Royal Commission. That table gives the following particulars of the Mortality of Coal Miners in Different Parts of the Country per 1000 Living:—

*Mean Annual Death rate per 1000 Population*

| | Years of age. | | |
|---|---|---|---|
| 1921–23. | 25–35 | 35–45 | 45–55 |
| Lancashire and Cheshire | 4·15 | 7·17 | 12·45 |
| South Wales | 4·18 | 6·94 | 12·30 |
| Derby and Nottingham | 3·46 | 5·38 | 9·80 |
| Yorkshire (West Riding) | 4·10 | 6·50 | 11·12 |

I cannot see that these figures bear out your contention that the mortality of miners in Lancashire is nearly double that of miners in Notts and Derby; and you seem to have disregarded the comparison with Yorkshire, which contains some of the most up-to-date collieries and the most modern mining villages in the whole country.

Nor does it seem to me that your argument as to the connexion between unrest and housing conditions is borne out by the evidence before the Royal Commission. In App. 35 on p. 330 of Vol. III of the Report it is stated that "with a county average of 5·9 per cent. of overcrowding the individual figures for St. Helens were 14·5 per cent. and for Wigan 10·8 per cent. But other mining towns, such as Farnworth and Chorley, had a percentage of overcrowding less than the county average." And I think it would be generally agreed that St. Helens is at least as much a chemical town as a mining town—if not more so. In fact, in Lancashire the miners are not isolated in mining villages to anything like the same extent as they are in other parts of the country, but live under housing conditions similar in all respects to those of the general working-class population.

Is it not probable that the explanation for the higher mortality, such as it is, in Lancashire is given in the passage in App. 32 on p. 325 of Vol. III that "we must not forget that the coal-mining industry is carried on in a part of the country where the mortality from these causes (bronchitis and pneumonia) in the general population is unfavourable—particularly in Lancashire"?

I am, Sir, yours faithfully,

PHILIP GEE.

King-street, Covent Garden, W.C., April 27th, 1926.

*** Our statement was based upon a comparison between (*a*) the comparative mortality figures issued by the Registrar-General in his Decennial Supplements dealing with occupations, and (*b*) the amount of unrest as measured by ballots of the miners taken on several occasions. The records which appeared in a letter to the *Times* of Jan. 24th, 1924, from Prof. E. L. Collis (who has considered the subject more fully elsewhere[1]) are as follows:—

| Coalfield. | Comparative mortality— | | | Percentage of miners that voted— | | |
|---|---|---|---|---|---|---|
| | 1890–92 | 1900–02 | 1910–12 | For strike, August, 1920 | Against resuming work, June, 1921 | Against wage agreement, Jan., 1924 |
| Lancashire | 1230 | 1000 | 941 | 90·6 | 89·6 | 94·3 |
| South Wales | 1322 | 951 | 774 | 77·9 | 73·0 | 89·8 |
| Yorkshire* | 1051 | 783 | 758 | 61·1 | 65·3 | 75·1 |
| Northumberland and Durham | 894 | 763 | 635 | 69·9 | 60·7 | 75·0 |
| Derbyshire | 841 | 676 | 591 | 71·8 | 52·7 | 76·8 |
| Nottinghamshire | | | 570 | 55·1 | 53·7 | 69·2 |

* The position of Yorkshire in 1920 may be noted; on this field a strike, which did not affect the rest of the industry, occurred in 1919 and was held to influence the vote of 1920. In 1921 and 1924 the percentages recorded placed this field not far from the position given by mortality.

In this connexion interest attaches to the mortality-rates on the coalfields for the years 1921–23, some of which are quoted in the above letter. These rates are not presented as comparative mortality figures, but nevertheless the order of the coalfields, arranged in accordance with these newer records, does not materially differ from that of earlier years.—ED. L.

## INSURANCE POLICIES IN CIVIL EMERGENCIES

*To the Editor of* THE LANCET

SIR,—With reference to Section 2 (*Accidental Damage*) of Clause 3 of the Doctors' Special Policy issued by Lloyds underwriters through the Medical Insurance Agency, the meaning of the words "and shall also indemnify the insured in respect of external damage to the insured car during riots and civil commotions" is undoubtedly that damage caused to any part of the car by external means is covered. It will be understood that mechanical breakdown is not covered either during riots or civil commotions, or during peace-time.

Such damage as (1) removal of carburettor, (2) puncture of petrol tank, (3) slashing of tyres

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[1] The Coal Miner: His Health, Diseases and General Welfare. Journal of Industrial Hygiene, May, 1923.

(4) damage to glass, &c., of covered cars is insured under the policy.

If a car is not used for its normal purpose the policy will be invalidated unless previous notice has been given and the assent of the underwriters obtained. Thus, a 4-seater car could carry four passengers even though they be not personally known to the owner and the policy would remain in full force, but a private car is not normally used for the conveyance mainly of foodstuffs. Damage to springs due to overloading is not covered under the policy whatever the cause of the overloading may be. Such damage would come under the heading of mechanical breakdown, and would not be covered in any event.

It should also be noted that the holders of fire and burglary policies are not usually covered for damage by riots and civil commotions, and the same remark applies to "combined" household policies. It would be wise, therefore, for all insured householders to see that they hold "comprehensive" household policies of the type issued through the Medical Insurance Agency, in which case they will find their interests fully protected in the terms of the policy.

I am, Sir, yours faithfully,

L. FERRIS-SCOTT,

Secretary, Medical Insurance Agency.

B.M.A. House, Tavistock-square, W.C., May 11th, 1926.

## SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.

THE annual general meeting of this Society was held on May 12th when the report for 1925 was accepted. The year has been memorable, for during it a letter was received from the Inland Revenue Authorities stating they much regretted that in future the Society could not be considered a Charity under the Finance Act and that consequently no further refund of income-tax would be made. At the present rate the tax would amount to £940. The secretary pointed out that this was the first time, since the foundation of the Society in 1788, that a refund had been refused, but was unable to get the decision altered. An appeal to the Special Commissioners heard last December was granted, but the Inland Revenue still dissented, maintaining that under the Finance Act the Society is not a Charity, though under Common Law it would be considered one, and asked the Special Commissioners to state a case for the High Court. As the Society's income for this year was diminished by £960 some reduction had to be made in the grants, and a Christmas present of £5 only was sent to each widow and orphan, instead of the amounts given last year—namely, £20 to each widow over 75 years; £15 to each widow under 75 years; and £10 to each orphan. Since the last report nine new members have been elected and seven have died or resigned. The Society now consists of one honorary member, 160 life, and 139 ordinary members, making a total membership of 300. The income from investments amounted to £3866. £297 was received from subscriptions and donations, £58 from life subscriptions, and £700 from legacies. The working expenses were £335. The invested capital now stands at £133,450. During the year two widows died and four came on the funds; on Dec. 31st there were 53 widows and seven orphans in receipt of grants. The amount given in grants was £4464. Membership is open to any registered medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross. The annual subscription for a member who at the time of his election is under 40 years of age is 2 guineas; if over 40 but under 50, 3 guineas; and if over 50, 4 guineas.

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THE Cambridge University Press (Fetter-lane, London, E.C.) announces the forthcoming publication of a book by Dr. Henry Head, consulting physician to the London Hospital and honorary Fellow of Trinity College, Cambridge, entitled "Aphasia and Kindred Disorders of Speech." It will be published in two volumes. Vol. I. contains an historical sketch, an account of the new methods of examination employed by Dr. Head, and the results of his clinical observations; further sections are devoted to the question of cerebral localisation of function and to novel theoretical conclusions as to the nature and causes of aphasia. Vol. II. is devoted to a series of clinical reports of cases, each of which illustrates one or more aspects of the problems dealt with in Vol. I.

# Obituary.

## WILLIAM JAMES MAURICE, B.M. OXF., M.R.C.S. ENG.

Dr. W. J. Maurice, who died at Reading on April 22nd, was the son of the Rev. Thomas Maurice and was born at Harnhill Rectory, Gloucestershire, in 1858. He was educated at Cheltenham, at Keble College, Oxford, and at St. Thomas's Hospital; soon after qualification he entered general and surgical practice in Reading. At the outbreak of the war Dr. Maurice, then senior surgeon to the Royal Berkshire Hospital, was given charge of the local surgical division, and in 1916 was appointed commandant of the Reading War Hospital. His success in this trying work was evidence of his tact and ability, and he won the admiration of those who came within range of his personality. "The influence of Maurice's early training was notable throughout the whole of his career," writes a colleague. "He was a devout churchman and showed his convictions in his daily life. Of great simplicity of character, he disliked everything which suggested pretence or display, and in his dealings with patients and with other doctors he was invariably trustworthy and straight. Of a tall and handsome presence and courteous bearing, his outward form gave fitting expression to his inward nobility. So strong and durable were his qualities that none appreciated them more than those who came most closely in contact with them. He was the perfect partner who won the affection and admiration of those who saw him as he really was. His work was always done conscientiously and with more than ordinary skill and ability, and while still an accomplished operator he gave up this part of his practice on the mere suspicion that he might be thought out of date or incapable."

Dr. Maurice's wife died some years ago and he lost three sons during the war. He leaves one son and two daughters.

## WALTER COURTENAY RIVERS, M.R.C.S. ENG., D.P.H.

Dr. Rivers, whose death occurred at his home, Worsboro' Bridge, Barnsley, on April 23rd, was a striking example of a man who in spite of ill-health and the need to earn his living contributed not a little both to literature and medicine. His student days were spent at the Charing Cross Hospital Medical School, where he was Roan Exhibitioner and silver medallist in medicine and whence he qualified in 1898, taking the public health diploma of the Irish Royal Colleges five years later. After assisting in the electrical department at Charing Cross Hospital and some surgical experience at the General Infirmary, Stamford, he went to the East as surgeon to the British and Colonial Steam Navigation Company, soon afterwards joining the Royal Army Medical Corps in India. In 1904, however, he was invalided home on account of pulmonary tuberculosis, and for more than 20 years his life was a struggle against disease. After four years of sanatorium treatment and intermittent temporary work he became medical superintendent of Barrasford Sanatorium, near Newcastle, and five years later accepted the position of tuberculosis officer to the Barnsley district of the West Riding County Council. In this murky mining locality he became greatly beloved by his patients for whom he worked unremittingly. Even those who met him casually soon found out how thorough, how thoughtful, how up to date was his work for the community. Rivers was well versed in general as well as in medical literature and in the special subjects about which he wrote. His work on the relation of tubercle to certain conditions such as squint will stand the test of time; he contributed to the Treasury of Human Inheritance on family phthisis, and wrote a number of articles on nasal defect in tuberculous subjects. His last book, "Through a Consulting-Room Window," is really brilliant. His literary style, distinctive and virile, reflects the thoroughness of German scientific workers for whom he had a profound admiration. He was a keen politician, an ardent socialist, yet also rather strongly anti-feminist, and a fervent pacifist. Though his outside interests were wide, his family life was happy and he was devoted to his wife and children. His health broke down seriously about two years ago, when the recrudescence of disease was stemmed only for a time by double artificial pneumothorax and by treatment with sanocrysin at a sanatorium in Denmark. But his joy of life lasted into almost the last stage of a long-drawn-out illness.

Of Rivers's intellectual equipment one of his friends writes: "His genius, and I use this word advisedly, was that of an angular character which requires to rub off its corners against kindred spirits in order to bring out the best of it. At Barrasford he was starving intellectually though he was an indefatigable student of men and books. The subjects on which he touched were many; the insularity of medicine in England, the stupidity or dishonesty with which new remedies for tuberculosis were launched without adequate investigation, the importance of German work on sex problems, and many others. His attitude towards life was one of quizzical, almost sardonic humour. Life had treated him hardly and he met his hardships not only with courage but with a smile. Had he enjoyed good health he would assuredly have made his mark either in literature or in medicine, for his literary gifts included a rare sense of the beauty of English, and his innate honesty and capacity for logical and consecutive thought would have carried him far in medicine."

## ROBERT HILL SHAW, M.D. DUB.

THE sudden death of Dr. R. H. Shaw on April 24th came as a shock to his friends, for he was attending to his practice up till the night before he died. Dr. Shaw had practised in Brighton for some 30 years and was one of the best known medical men in the town. Born at Ballymahon, Co. Longford, 66 years ago, he was educated at Trinity College, Dublin, and graduated in medicine in 1892, becoming M.D. Dub. six years later. He held several house appointments in Dublin before he went to Brighton, where he soon acquired a large practice. During the war he was granted a commission as captain in the R.A.M.C. and did good work at several of the large Sussex camps. In Brighton he was surgeon to the East Sussex constabulary and held other appointments; he did valuable work amongst the poor. In his leisure time Dr. Shaw found opportunity to contribute a number of papers to medical journals. He leaves a widow, a son, and a daughter. The funeral on April 28th was attended by 500 to 600 people representative of all classes in the town.

## THE LATE COLONEL C. A. JOHNSTON.

AN obituary notice of Colonel Charles Arthur Johnston, C.B., D.S.O., I.M.S. (retd.), appeared in THE LANCET of May 1st. We have received a personal appreciation from Sir Patrick Hehir, who writes: "Colonel Johnston was held in great respect by all who had the pleasure of working with him. We served together on several occasions, and he filled the place I was to have occupied at an early stage of the Great War—viz., A.D.M.S. of the Expeditionary Force to German East Africa. He was a splendid workman, most thorough and reliable, and a good and careful doctor. He had the exceptional faculty of making those who worked with him his personal friends and of getting the best work out of his juniors. He was a cheerful and interesting companion and a fine all-round sportsman. The severe and prolonged hardships he went through in East Africa undermined his constitution and, as he never spared himself, climate, defective food, exposure, and disease left their sting. His loss is deeply regretted by his many friends in and out of the service, who offer their deepest sympathy to his widow and son."

## HENRY RENNEY, M.D., D.HYG. DURH.

Dr. H. Renney, who died on April 24th, was born in Sunderland 66 years ago and was medical officer of health for the port and borough. He was destined to become an architect, but his thoughts turned to pharmacy and then to medicine, and after studying at the College of Medicine, Newcastle, he graduated in the University of Durham in 1880, proceeding to the M.D. degree two years later. After a number of house appointments at Newcastle and elsewhere he settled in general practice at Sunderland, acting as deputy to the medical officer of health until 1904, when he succeeded Dr. Harold Scurfield on the latter's appointment to Sheffield. In 1908 he became doctor of hygiene in the University of Durham. Dr. Renney was a hard-working and conscientious man with a thorough knowledge of his work. He started a system of voluntary notification of tuberculosis in Sunderland and was responsible for the appointment of a woman health visitor at a time when this was very unusual. Taking a great interest in the Northern branch of the Society of Medical Officers of Health, Dr. Renney was at one time its president. He was also a Freemason and a keen student of Greek. He leaves a widow and two sons.

## ARCHIBALD BURNS GEMMELL, O.B.E., M.R.C.S. ENG.

ON April 28th Dr. Burns Gemmell died at his house in Liverpool after a long illness. He was the son of Dr. Gemmell, of Dunoon, Ayrshire, and practised in Liverpool for many years. Qualifying in 1883, he became house surgeon at the Western Infirmary, Glasgow, and then spent some years in Burma. Long before the war he was closely associated with the R.A.M.C., and in 1913 he was appointed commandant of the 1st Western General Hospital. In this capacity he was soon to have his organising powers fully tested. At the beginning of the war the unit adopted the infectious diseases hospital, Fazakerley, as its headquarters and the personnel was expanded to include a large number of Liverpool doctors. Lieut.-Colonel Gemmell became responsible for the supervision of military hospitals over an area stretching from south of Shrewsbury to north of Carlisle. His duties were carried out with success for he was an excellent administrator. During part of the war he did similar work in France, commanding the 57th General Hospital of the British Expeditionary Force. He leaves a widow, a son, and a daughter.

## THE LATE DR. FREDERICK PALMER.

IN supplement to the obituary notice published in our issue of May 1st, Dr. Harry Campbell has sent us the following appreciation of his colleague's work: "Dr. Frederick Palmer's sound practical knowledge gained at the Radcliffe Infirmary, where he was resident for some years, coupled with his natural gifts of energy, kindness, geniality, tact, business instinct, and personal charm, were bound to secure for him a prominent position in the profession. The courageous step he took, when well advanced in life, to abandon general practice and begin consulting practice in London was thoroughly justified by events. The wisdom of his election as physician to the West End Hospital for Diseases of the Nervous System was proved by many years of skilled and devoted service, and by the affection he inspired in all connected with the hospital. Dr. Palmer faithfully obeyed the admonition 'Judge not'; I never knew him either directly or by veiled innuendo to cast aspersions on others. He was happy, serenely happy, in his home life, and was fond of music, history, and biography. Golf he never succumbed to, but many an off afternoon was spent in walks round and about London with his long-time friend, Dr. de Havilland Hall. Though advanced in years, Dr. Palmer was singularly youthful in mind and body, and it was a great grief to his many friends when they learnt that he had fallen a victim to an attack of virulent influenza."

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### Welfare Centres and Birth Control.

In the House of Lords on Wednesday, April 28th, Lord **Buckmaster** moved :—

> "That His Majesty's Government be requested to withdraw all instructions given to, or conditions imposed on, welfare committees for the purpose of causing such committees to withhold from married women in their district, when sought by such women as to the best means of limiting their families."

He said that the subject of his motion was one of the large group of new grave questions that were pressing upon the country with increasing insistence, and which demanded the rational, restrained, and intelligent discussion which could be obtained nowhere better than in their lordships' House. Some 50 years ago this question was new. Its advocacy was attempted to be punished by the Criminal Law; it startled and shocked people, but to-day the only question left was this: Will you take steps to withhold from the poor the knowledge possessed and practised by the rich? They could not read any books dealing with this question—and he had read many—without finding that they treated it as an accepted axiom that birth control was being extensively practised by the well-to-do classes, and that it was only among the poorest, the most ignorant, the most destitute, the most shiftless, helpless, hopeless stratum of society that that knowledge was not used. Statistics were eloquent on the point. If they took 1000 married people under the age of 50 the birth-rate for schoolmasters was 93; for clergymen of the Church of England it was 100; for clergy of all denominations it was about 102; for doctors and professional men it was from 103 to 105; for skilled labour 153; and for unskilled labour 247. If they took the standard of intelligence measured in the same way by examination of the children in the schools they would find that there was a descending scale of intelligence which was in the exact inverse ratio to this standard of birth-rate. In spite of what people might say about the nation being divided into classes there was continually going on the winnowing process of nature, and in the great solution of life every organism took its proper place according to its specific gravity. The people for whom he spoke represented the lowest sedimentary stratum of all. In these circumstances he asked why was it that this knowledge was withheld from them?

The present position was this: The Ministry of Health would provide money to assist welfare centres set up by local authorities to enable the centres to give help and advice to women who were expecting children and to women who had young children under their care. But there was an expressed prohibition that prevented these people, though they were qualified medical men and women, from being able to give information to any person who asked how further births could be prevented. The question before their lordships was whether that state of things ought to be allowed to continue, not merely in the interests of justice, but in the interests of our race. There were people who deplored the fact that birth control was practised by the well-to-do. But it was no use weeping over lost battlefields; that struggle had been fought and it had been lost and won, and they could never recapture the position. The reason was not that women were selfish and men were worthless or that the world was addicted to nothing but pleasure. It was due to a much higher and more permanent cause than that—namely, the desire of parents to secure that their children were not pressed out by the illimitable competition of unrestricted numbers, and to the hope that they would be able to make for their children an easier and better place in the world than they themselves had filled. People who talked about the ennobling effect of struggling with poverty had never known the struggle, which was the most degrading and demoralising struggle to which any human being could be subjected. Let their lordships note that his motion laid no burden and imposed no duty on any medical officer of health. It did not even say that in the opinion of the Ministry of Health it ought to be done. But it was to let these qualified people, if they in their judgment thought fit, exercise their medical knowledge for the relief of the women that came before them.

Proceeding to give examples in support of his case, the noble lord instanced a woman who was married at the age of 17. At the age of 34 she had had 18 pregnancies with 11 live children. Her husband, a hawker, was often away from home and did not attempt to support the family. The mother did this by hawking. The housing accommodation was one living-room and two bedrooms. The mother shared a flock mattress without sheet or blankets with the youngest children, and her last confinement was conducted under these conditions. The mother and all the children were clean and well-cared for. She refused to have relation with her husband until he overpowered her, and, of course, by the merciful law of this country a man could not rape his wife. She had asked him to take other women. During the last pregnancies she had done everything she knew to procure abortion. She could not go away from home. That case was by no means unusual, and such cases would continue if they did not enable these women to obtain knowledge of birth control. They all admitted that they made repeated and frequently successful efforts to procure abortion. He could not help thinking that they lived in a world of sham or in a cloud-cuckoo land. Every now and then cases came before the courts and some person was sent to gaol for a long period of years for performing an illegal operation. But that was the commonest thing in these places; the women were driven to resort to it as the only means of escape from a state they found to be intolerable. But when they came and asked the medical officer of health how they might prevent themselves getting into the same condition again the officer said: "No; if I venture to tell you anything of the kind the Ministry of Health would stop the grant for this centre, and we shall not be allowed to continue." Probably the saddest story of all was this:—

> "When we first knew this family they had four children, all of whom had been born without eyes. The two eldest had died when quite small, and two little girls, aged 2 and 4, had managed to survive. The mother was suffering from dementia præcox, and spent 18 months in hospital. She was incapable of training the children, who, sightless and speechless, sat all day long in their little beds manifesting not a single normal reaction to the tests that were given. The father was devoted to the mother and refused to send her to institutions, but, realising that she ought not to have any more children, begged the information by which he could prevent such a result."

All such women could be told was: "If you want information you will find a shop not far away with unclean pictures in the window and every suggestion of prurient and filthy literature inside. Go there, and they will probably be able to tell you, and it is perfectly certain that they will give you information that may be most deleterious to your health, and you will certainly not be under trained medical supervision. But it is not for us to help you." He really was anxious to know what was the answer to the case he had put. He asked that duly qualified medical men and women should not have their discretion fettered as to the way in which they should give advice to people who sought their help. Children could no longer be made instruments for the production of profits in a balance-sheet. It was said that directly they limited the birth-rate they began to descend in the scale of the world. Was the measure of nations to be tested by their fecundity as they tested the value of rabbits? It was not a question of numbers, but a question of quality. Numbers would not win the next war, but brains. At the moment there were just on a million people unemployed in the country. Did anyone think that in present conditions they could absorb these people in industry within a measurable period of time, and if so, were they going to absorb the over-flowing increase of the population? Last year the population increased by 247,000 people, and before that the increase was larger still. Within the first 20 years of the century we added more to the population than during the whole eighteenth century. Those who held that it was for the public good that the population should increase at that rate must take the responsibility for the consequences which must inevitably occur. With all due respect he found himself quite unable to understand what was the ground on which religious objection to this principle was based. All attempts artificially to prevent the natural consequences of relations between man and woman had been condemned by a group of eminent ecclesiastical authorities at Lambeth. They did not say that blind, syphilitic, tubercular, and mad children must be reproduced, but they said that the right course for a man or woman to follow was to exercise self-restraint. What a strange doctrine to preach to people who lived under the conditions he had described! Human nature being what it was this doctrine of abstention was impossible. There were occasions when he felt that if he stood alone in the world he would protest against the doctrine that there was something in itself that was evil in the relations between man and woman. If that were true, evil was to be found in the very centre of all beauty, of the blossom of life. This doctrine that people should abstain from these relations was wrong and mischievous, and was certain to lead to the shattering of more homes than any of the causes they had heard denounced in that House.

The **Marquess of Salisbury** (Lord Privy Seal) said he would be very sorry if a mistake were made by their lordships that afternoon, because what was really concerned was the success of the great policy of hygiene which had been the characteristic of the last half century in this country, and which had met with such success. Everyone would sympathise with the wretched cases of misery and sorrow mentioned by Lord Buckmaster and would do their utmost to prevent them. But they must be very careful indeed that in finding a remedy for the evils he had detailed they did not strike a fatal blow at a great service which was doing infinite good to the very class for which Lord Buckmaster pleaded. The maternity and child welfare system had been in existence for a number of years and had grown enormously. There were over 400 maternity and child welfare committees, sometimes of the county councils and sometimes of the lesser local authorities. There were over 2000 centres scattered all over the kingdom. Apart from the official personnel there were a large number of voluntary workers whose support was absolutely vital to the success of the system. There were, roughly speaking, 700,000 mothers who bore children each year. Of those upwards of one-third probably took advantage of these maternity centres, and the success of the movement had been very great. The mortality among children under 1 year had gone down by 50 per cent. since 1900. Unless Lord Buckmaster was very careful he would strike a fatal blow at this great system, because he was proposing to bring within its purview a subject which was alien and in the highest degree controversial. Birth control might be useful; it might be necessary; but the kind of people who were interested in one were not necessarily interested in the other. He had made some little inquiry, and he had found that to bring this subject within their purview would profoundly shock a very large number of those who were engaged in this voluntary work. It was not only religious bodies who were opposed to it. He had received a resolution from the Mothers' Union, which represented a very large number of women of the lower class. That resolution, drafted in strong terms, urged their lordships not to pass Lord Buckmaster's motion. If they did anything that would interfere with the success of these centres they would be extremely rash. It was for that reason in the main that the Government could not support the noble lord's motion. The movement for birth control was not confined to people whose health dictated that they ought not to have any more children. Everyone knew that the movement was largely supported by women who could have children, but who preferred not to have them—married women who did not do their duty and preferred their own ease to the obligations they had undertaken. They might be deeply sorry for the unfortunate, the wretched, and the miserable women, but they had no pity whatever for the lazy and the vicious woman. How could the medical officers at these centres discriminate in regard to giving this information?

Lord BUCKMASTER: Why not? Private doctors do.

The MARQUESS OF SALISBURY said that might be so, but this was not a private doctor. It was quite impossible for the doctors at these *centres to make* any distinction. And in the case of these indolent women of whom he had spoken ought the husband not to be considered? Poor women could go to doctors just like richer people, and it was a great mistake to suppose that they were utterly ignorant in these matters. For a relatively small fee they could go to the doctors whom they generally consulted. But however that might be, he asked their lordships not to allow the hard cases to influence them too much. Lord Buckmaster seemed to regard the fall in the birth rate as rather a good thing. He (Lord Salisbury) thought it was a very serious thing. The more healthy English men and women who were produced the better, in order to populate not only this country, but the Empire. In the decade 1871 to 1880 the births were 35 per 1000. In 1921 they were only 18 per 1000. The reason that the population was increasing was on account of the shrinking death rate. Birth control methods were most popular in France and the population of that country was going down. The real catastrophe in front of European civilisation was that the white races would begin to diminish. This was not true yet of the Slavs, but the ratio of increase in Germany was receding, as was also the case in Britain. In that direction lay national death. He appealed therefore to their lordships not to lend any countenance to the official sanction of birth control with all its dreadful suspicion.

The ARCHBISHOP OF CANTERBURY said that of these maternity and infant welfare centres there were 2122 in England to-day and at 611 of them pre-natal work was carried out. Prior to the formation of such centres the death rate among children under 1 year was very high. In 1905 it was 128 per 1000, in 1910 it had fallen to 110, and it was now 75 per 1000. That fall went far to conceal or disguise a rapidly *falling* birth-rate. In addition to these subsidised maternity and child welfare centres there were now in England a good many birth control clinics, established wholly by voluntary agency and supported either by voluntary subscriptions, or by the fees of the patients, or by both. He made no suggestion that there should be any restriction or interference with these birth control centres which were supported by some exceedingly thoughtful people. But Lord Buckmaster asked why the advice given there could not be given in all the welfare centres. He knew very well medical men and health visitors who were at work in some of the large centres, and he had made inquiries from them on this matter. He found a perfect assurance everywhere: firstly, that the applications for advice of that particular kind was not unknown but rare; and secondly, that no restraint whatever was put upon the doctor if upon medical grounds he thought it necessary to give advice respecting child-bearing, but he was under no obligation to give such advice. Surely that was right. If they looked at the rules which the Ministry of Health issued they would see that—

"Collective teaching may be given either on the consultation day, when most of the mothers will be present, or on other days for women who wish to learn about some special subject. On consultation days the teaching will usually be limited to short, simple 'health talks' by the superintendent on subjects of general interest, and accompanied, when possible, by practical demonstration."

He wished their lordships to realise that if they passed the noble lord's motion they laid upon these men who were public officers a moral obligation to give that advice to groups who asked for it. The two regulations which did exist and upon which the noble lord's motion rested were as follows:—

"(1) That the maternity and infant welfare centre should deal only with the expectant or nursing mother (and infant) and not with the married or unmarried woman contemplating the application of contraceptive methods.

"(2) It is not the function of an antenatal centre to give advice in regard to birth control, and exceptional cases where the avoidance of pregnancy seems desirable on medical grounds, should be referred for particular advice to a private practitioner or hospital."

He did not think that the second of these two rules was worded in the best way, but the medical man or woman needed in his judgment to be protected against having that moral obligation laid upon him or her to give advice upon this subject of contraceptives, which he or she might not wish to give, and which those who were supporting and guiding the centre did not wish should be given. In order *to satisfy himself* he made inquiries from some of the highest authorities in the Ministry of Health and he asked their lordships' attention to a memorandum which he had drawn up from the conversations he had had with those authorities:—

"In all cases attending the clinics where this information is necessary on medical grounds advice is always given by the doctor irrespective of any request on the part of the mother. Neither by the wish of the mother *nor by statistical* evidence have we been led to believe there is any great demand for this kind of advice. In suitable cases recommendations have been strongly made that the use of *contraceptives* should be discontinued, and we have reason to know that the advice has been acted upon with satisfactory results.

"The extreme medical cases in which another birth would be likely to prove disastrous to the mother are few and far between. Such cases would not ordinarily attend a maternity and infant welfare centre, but if and when they did it may be safely assumed that the mother would be advised as to the right course to adopt in order not to have any more children. The purpose of the maternity and infant welfare centre is to deal only with the expectant or nursing mother (and her infant), and not with cases of disease on the one hand, or, on the other hand, with married or unmarried women contemplating the application of contraceptive *methods*. The object of these centres is: (1) to advise the expectant and nursing mother; (2) to provide antenatal supervision, and (3) to care for the infant. In order to conserve the purpose of these maternity and infant welfare centres it is necessary to exclude any systematic or organised work in the direction of contraception."

It was made perfectly clear that no sort of restriction was placed upon medical men. He asked further whether if the medical man or woman did give this advice it would mean either the withdrawal of the grant or discredit to the individual. The idea was laughed at. If, therefore, the Ministry of Health would revise the wording of the second regulation that would practically knock the bottom out of the grievance which was supposed to exist. There was no desire to intervene between *doctor* and patient, but the medical officer did not wish to be morally forced to give such information against his or her will. Not only was there the widest possible difference of opinion on the ethical side of the question, but what about medical knowledge? He had had talks with Lord Dawson of Penn about it and had read the evidence which he had given on the subject. Lord Dawson of Penn said:—

"Up to now there has been no systematic investigation of contraceptive methods by the medical profession in this country, though such an investigation is now proceeding in the United States."

With such testimony as to the present uncertainty of knowledge on the subject it would be intolerable to lay upon the medical authorities the duty of giving such advice.

Lord BALFOUR OF BURLEIGH said that misapprehension had arisen owing to the words in the official rule about "exceptional cases in which avoidance of pregnancy seems desirable on medical grounds." He believed that those words referred definitely and rigidly to cases in which a further pregnancy would definitely mean danger to the life of the mother. He was told that it meant one of two things—either a particular form of disease of the kidneys or else a physical condition which was known as restricted pelvis. Lord Buckmaster wanted information given in cases where there was disease, say tuberculosis or venereal disease, and where children would be born diseased. It was suggested that women might apply to a hospital or a private practitioner, but in the out-patients' departments of the big hospitals they would not, or could not, give this information, and women of this class had usually no private doctor. These centres knew all about the women who came to them. Each had a qualified medical officer in charge and health visitors who visited the women in their homes and followed up the cases. It was obvious that that was much better machinery for disseminating this information than a birth control clinic. In Holland information about contraceptive methods had been placed at the disposal of the poorest people for the last 30 or 40 years. It was true that the birth-rate in Holland had fallen, but not anything like so much in the educated classes as it had in this country. What could be a greater recruiting agency for Bolshevism than the irresponsible and ignorant propagation of the unfit as it was going on to-day in the slums of our industrial cities?

Viscount Fitzalan of Derwent submitted that no Government would be justified in acting on a motion of the kind moved by Lord Buckmaster unless they were satisfied that there was, at any rate, more or less unanimity in the medical profession with regard to it. He had a list of names of eminent physicians who were all against these proposals connected with birth control. They were Dr. H. R. Andrews, senior obstetric physician, London Hospital; Dr. Hector Cameron, physician to Guy's Hospital; Mr. Bellingham Smith, senior obstetric surgeon to Guy's Hospital; Dr. Ernest Ware, senior surgeon, Hospital of St. John and St. Elizabeth; Dr. A. E. Giles, senior surgeon, Chelsea Hospital for Women; Dr. R. A. Gibbons, physician to the Grosvenor Hospital for Women; Dr. F. J. McCann, surgeon to the Samaritan Free Hospital for Women; Lady Barrett, Dr. Mary Scharlieb, and Dr. Louise McIlroy. Last July the welfare group of the Society of Medical Officers of Health at its annual meeting debated this subject. Dr. Letitia Fairfield urged that the removal of the ban of the Ministry of Health would inevitably split the child welfare movement from top to bottom. It was significant that the whole of this question was debated at that meeting, and although there was undoubtedly considerable medical support no resolution in favour of birth control was passed. He would quote from The Lancet of May 14th, 1921. Dr. Giles was reported as saying that he wished the opinion to go forth from the Obstetric Section of the Royal Society of Medicine that the use of contraceptives was a bad thing. He would also like to quote Dr. Robertson, medical officer of health for Birmingham, who said in his annual report for 1924 on the question of artificial birth restrictions :—

> "Its public health importance largely centres round the fact that already in a certain number of cases most mischievous results have come to light in Birmingham, due to the fact that methods of birth control are becoming widely known to many young people, who, as a result, indulge in promiscuous intercourse with the knowledge that no inconvenient result will follow."

Dr. McCann was reported in the *Pall Mall Gazette* of Jan. 31st, 1923, as saying :—

> "Besides being the wrong method of dealing wih the question of birth control, contraceptives are dangerous and harmful to any woman who would use them. There is, in my view, not one of these appliances that is not either injurious or unhealthy. It is a truism to say that one should not interfere with nature, but it is one which many people have forgotten. The extensive use of these things invariably produces some form of ill-health, together with a general distress of mind."

Allusion had been made to France, but it had not been pointed out that the French Government five or six years ago found it necessary to forbid by law the use of contraceptives. No Government would have passed a law like that unless they had felt bound to do so for the safety of their country. He could not see how any British Government with the smallest germ of patriotic feeling could possibly, after the example of France, take the smallest step to advertise methods of this kind. As an Englishman he protested against any such step which he was firmly convinced would let his country down.

Earl De La Warr said that in his view not a single argument put forward by Lord Buckmaster had been touched or answered. He thought it was for their lordship's House, quite irrespective of what the House of Commons did, to recognise a good wholesome social tendency when it appeared, and instead of turning their backs on the forces of science which made the realisation of that new spirit possible, to meet and to utilise them for the good of society.

Lord Rathcreedan, in supporting the motion, said that medical science would continue to advance, and those who were in a position to do so would take advantage of that science. Were they going to deny it to the poorest classes of the community?

Earl Russell also supported the motion. He said he was acquainted with one of the birth control clinics—the first that was founded by Dr. Stopes. The rule there was that no birth control advice was given to newly-married women, but only to married women who had already had one child. He profoundly disagreed with the idea that it was the duty of women to bear children because their husbands desired it, or because it was for the good of the country. The time had passed when woman was to be regarded as a serf, either of her husband or of the State. He did not think that the most ardent advocates of birth control had ever contended that any perfect methods had yet been devised, or that there were any methods that were entirely free from objection. That was true of many other branches of medicine, if not of most of them, but the fact that they knew very little about cancer, for instance, was no reason for not using the best medical knowledge that was available.

Lord Wrenbury said that every noble lord who was going to vote on this motion must make up his mind upon this: Ought a medical officer at any of these centres to be placed in such a position that he must refuse to give applicants information which he knew would be of use to them. It appeared to him that it was the duty of everyone if they had knowledge which was useful, to promulgate that knowledge to the best of their power, and to run the risk of somebody abusing it.

The Lord Chancellor said their lordships were not asked to express any opinion for or against birth control, nor to say whether propaganda in favour of birth control should or should not be lawful. Welfare centres were formed to deal with cases of childbirth and for no other purposes. The resolution was not confined to women who sought advice on the ground of health. It would empower any member of the committee who had no medical knowledge to give women advice. The Ministry of Health intended that any cases where it appeared to the committee that further conception might be dangerous to the life of the woman or might destroy her health should be referred to the medical adviser. They were bound to insist that the advice must be medical, but it might be given by a panel practitioner.

On a division the motion was agreed to by 57 votes to 44.

### *The Economy Bill.*

On Tuesday, May 11th, the House of Lords went into Committee on the Economy (Miscellaneous Provisions) Bill. After a number of amendments, moved on behalf of the Government to carry out promises made during the passage of the measure through the House of Commons had been agreed to, the Committee stage was concluded and the Bill was reported to the House.

### *Midwives and Maternity Homes Bill.*

In the House of Lords on Monday, May 17th, the Midwives and Maternity Homes Bill (which has passed through the House of Commons) was read a second time.

## WORKING HOURS AND INDUSTRIAL FATIGUE.

On Friday, April 30th, in the House of Commons, Mr. Mackinder, a member of the Labour Party, moved the second reading of the Hours of Industrial Employment Bill, a measure the central idea of which was to establish a 48 hours week for all persons employed in industrial undertakings. He said that the Bill did not include all workers—hundreds of thousands, if not millions, of people were outside its scope—but the desire of the Labour Party was to secure that the word and bond of Great Britain should be kept as regards the ratification of the Washington Convention, and he looked to Parliament at some future date to pass similar legislation for the protection of all the workers in the country. Mr. Short seconded the motion for the second reading. Major Kindersley moved the rejection of the Bill, and Mr. Lloyd seconded.

Dr. Drummond Shiels, in supporting the measure, said that in the last report of the Industrial Fatigue Research Board for 1924 there was an account of an investigation into the significance of output in industrial efficiency by Dr. Vernon. Speaking of output he said :—

> "The writer found that when men and women engaged in making various fuse parts had their hours of work reduced from about 74 a week to 64 a week, and subsequently to 55 a week, their working speed improved considerably with each reduction of hours, but that it took three or four months before it obtained equilibrium with the shortened hours. For the first week or two after the change of hours, there was little or no response, and then the output, reckoned per working hour, began to mount up steadily till finally it reached a point at which it more than compensated for the loss of working time, and the total output each week was higher than before."

In regard to the sickness rate this investigator said :—

"During the war I collected sickness figures at three large national shell factories over an 18 months period, during which the hours of work were changed considerably by the adoption of various shift systems. The time lost by sickness and other avoidable causes was carefully separated, and it was found that the sickness time fell off steadily the shorter the duration of working hours. The women when working for 62, 54, and 44 hours per week lost respectively 6·1, 4·3, and 3·1 per cent. of their time whilst the men, working for 64 and 54 hours per week, lost respectively 5·7 and 4·0 per cent. of their time. During the last three years I have collected sickness data at several factories, and have always found it to be less than the figures quoted. For instance, at a tin canister factory where 1000 women were employed, only 2·1 per cent. of working time was lost by sickness between September, 1922, and August, 1924 and at a large boot and shoe factory the women in 1922–1923 lost 2·6 per cent. of their time from sickness and the men 1·8 per cent. of it. At both these factories a 44 hours week was being worked."

Whether they had tariffs against them, or whether they had continental competitors working under various advantages which this country did not possess they were faced, said Dr. Shiels, with the fact that the maximum efficiency of workers was given when a week of not more than 48 hours was worked. Dr VERNON also said :—

"Evidence of another kind was obtained by Mr Bedford and myself in several industries—carton making, labelling, shoemaking—where short time was in force. The workers were usually on an eight hours day, but when on short time they put in only three, three and a half, four, four and a half, or five days a week. We found that as the number of working hours increased the speed of production increased likewise till it attained a maximum with a working week of about 40 hours."

He (Dr. Shiels) thought that was an important point to note. The report continued :—

"With longer hours still it fell away, and it was 2 per cent. less per working hour when a 44 hours week was being worked and 4 per cent. less with a 48 hours week."

These quotations showed, while even the fairly considerable extent of the investigations could not be regarded as making them absolutely authoritative, that even less than the number of hours stated in this Bill probably gave the maximum efficiency and output. Therefore if this Bill were passed it could not be argued on scientific grounds that the working efficiency of the country would be reduced He hoped that the Bill would not only be read a second time, but that the Government would take it over

Dr VERNON DAVIES said that when the Labour Party first brought in the Bill he spoke and voted in favour of it. Having been connected with an industrial constituency for over 20 years, both as a medical practitioner and as a factory surgeon, he had an intimate knowledge of the working lives of the people, and therefore he felt that he might give the House some of the benefit of his experience. Having done so he thought that the House and the Labour Party in particular would have been satisfied with the gesture then made and would not have brought the Bill forward again this year He regretted that they had done so, because he thought that the present was a most inopportune moment. They had heard from several speakers that already 90 per cent of the workers of the country were working eight hours a day or less, therefore even if this Bill received its second reading it would not produce very much difference in the situation. Bearing in mind the recent conference held in London by the Minister of Labour with some of the Labour Ministers of foreign countries at which an agreement was come to which led them to hope that in a very short time the ratification of a 48 hours week would be an accomplished fact, he thought that the Labour Party might have trusted to the honour and honesty of the British Labour Minister and the Labour Ministers of foreign countries in this matter By improved management on the part of employers the necessity for the hours fixed in this Bill would not be quite so marked, because improved organisation would mean reduced hours. The old fashioned employers would be eliminated by modern competition unless they brought their equipment, plant, and management up to the state of modern efficiency He would suggest to employers that one of the first essentials for them was a scientific investigation into hours of labour and their bearing upon production It did not necessarily mean that the same hours of labour were best for all industries. There should also be a scientific investigation into the very important question of fatigue They had to remember three axioms If they had no health they had no energy if they had no energy they had no output and if they had no output they had no profit. Experiments had shown that in many industries a reduction of hours had been followed by increased production. Speaking generally, the more the human factor came into the question the more benefit was obtained from the reduction of hours, while the more the machine was considered the less the benefit was. The economic maximum of hours depended first of all upon the strain involved in the work It depended also upon the extent to which the work was governed by the pace of the machine Different rates of working meant different rates of strain. Then they had the factory environment—temperature, ventilation, and so on—the age and sex of the workers, factory organisation, such as welfare work, the food of the workers, and other factors. Welfare work was an economic advantage to most businesses. Fatigue was a most important point because it would have a very great effect upon the future of industry Fatigue was simply the result of activity which showed itself in a diminished capacity for doing work. The worker might be putting in the same number of hours, but actually producing less. The great test for fatigue was first diminished output, and secondly loss of health and increased liability to accidents, and above all nervousness and irritability on the part of the worker Fatigue was primarily a nervous, a psychological element. It was not necessarily muscular, because by the time that the stage of muscular fatigue was reached things were very far advanced. The point of his argument was that from the economic aspect alone it would pay the employers of the country to inquire seriously into the health of their workpeople and to see that the hours worked were economically the best.

Mr BETTERTON (Parliamentary Secretary to the Ministry of Labour), speaking for the Government, said that the Washington Convention without the agreement come to recently at the International conference of Labour Ministers in London was as unacceptable as it ever was. One of the points to be considered was whether the London Agreement could be rendered an effective instrument equally with the Washington Convention. That was a matter of considerable difficulty and might require consultation with other interested States. For these reasons it had not been possible for the Government to reach a decision on the subject. He asked the Labour Party to consider whether in the present circumstances they might not be seriously prejudicing the very objects they had in view by forcing a decision on that Bill that day

After further discussion Sir R. SANDERS moved the adjournment of the debate which was carried by 186 votes to 119

### *The Coroners Bill.*

On Wednesday, May 12th, the Coroners (Amendment) Bill was read a second time.

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## HOUSE OF COMMONS

### THURSDAY, APRIL 29TH

### *United States and Service Disability Claims*

Major COHEN asked the Minister of Pensions whether he was prepared to follow the example of the United States of America, which allowed ex Service men suffering from tuberculosis, neuropsychosis, paralysis agitans, encephalitis lethargica, and amœbic dysentery to receive pension provided they could prove the service origin of such disability, irrespective of the date on which the claim was submitted.—Major G C. TRYON replied : If, as I gather, my hon and gallant friend is referring to the preferential terms given to the diseases specified by Section 200 of the World War Veterans Act, 1924, it is not correct to state that such preferential terms are accorded "irrespective of the date on which the claim is submitted." By the provisions of the section these terms were only accorded to men who showed, prior to Jan. 1st, 1925, that they were suffering in an appreciable degree from these disabilities. I am not prepared to recommend that the provisions for war compensation adopted by this country should be modified on the lines suggested.

### *Drugs Supplied to Panel Patients.*

Colonel DAY asked the Minister of Health whether it was proposed to hold an inquiry as to the purity of drugs supplied to panel patients.—Mr N CHAMBERLAIN replied : Arrangements have already been made and are now in operation for the systematic analysis of sample prescriptions with the object of testing the purity of ingredients and the accuracy of dispensing I see no necessity, therefore, for such an inquiry as the hon. Member suggests.

### TUESDAY, MAY 11TH.

### *Influenza Deaths.*

Mr NEVILLE CHAMBERLAIN (Minister of Health) informed Mr Day that 244 deaths were certified as being due to influenza in the administrative County of London during January, February, and March last Of these 6 were under the age of 1 year, 18 between 25 and 35, 20 between 45 and 55, 40 between 55 and 65, 48 between 65 and 75, and 53 from 75 years and upwards.

### *Indian Medical Service*

Mr LANSBURY asked the Under Secretary for India as the appointment to the post of Surgeon General of Madras was made by the Government of India from the All India list, why, in view of the fact that health was now a transferred subject, the appointment was not left to be made by the Government of the Madras Presidency.—Earl WINTERTON replied that the Indian Medical Service, being an All-India Service, was a central subject. To safeguard the position of the members of the Service, it was provided in the Devolution Rules that a local government should employ such number of Indian Medical Service officers in such appointments and on such terms and conditions as might be prescribed by the Secretary of State in Council. Among the posts reserved for the Indian Medical Service under this rule was that of surgeon-general with the Government of Madras, and one of the conditions prescribed by the Secretary of State in the case of this and a small number of other high posts was that they should be filled by nomination by the Governor-General. The object of prescribing this condition was to safeguard the interests of the Service as a whole, and the claims of officers not serving in the particular province concerned.

### *Ultra-violet Radiation in Scotland.*

Sir J. GILMOUR told Dr. Drummond Shiels that facilities for the treatment of tuberculosis by ultra-violet radiation (light treatment) had been provided or were in course of being provided by each of the four large cities in Scotland, the Middle Ward District Committee of Lanarkshire, the burghs of Greenock, Paisley, Motherwell and Wishaw, Coatbridge, Falkirk, and Kirkcaldy, the county council of Ross and Cromarty, and the following combinations of local authorities: the Fife and Kinross Joint Sanatorium Board, the South-Eastern Counties Joint Sanatorium Board, and the Dumfries and Galloway Joint Sanatorium Board. The facilities so provided by local authorities were, by arrangement, in some instances available for neighbouring areas, and the facilities provided at certain voluntary institutions were also available to local authorities. The nine first-mentioned local authorities and the burgh of Kilmarnock also provided, or were in course of providing, light treatment in connexion with their schemes of maternity service and child welfare.

## WEDNESDAY, MAY 12TH.

### *Pneumothorax Treatment by Local Authorities.*

Dr. SHIELS asked the Minister of Health how many local authorities in England and Wales made no arrangements for pneumothorax treatment and X ray screen diagnosis in connexion with tuberculosis schemes.—Mr. NEVILLE CHAMBERLAIN replied: In England, out of the 152 local authorities concerned at least 115, according to the information in my department, make arrangements for X ray examinations, and at least 50 have arrangements available for pneumothorax treatment. It is possible that such arrangements exist in some of the other areas. In Wales arrangements for both purposes have been made by the Welsh National Memorial Association, with whom all the local authorities concerned in Wales contract for the provision of treatment for tuberculosis.

### *Dental Treatment in H.M. Prisons.*

Mr. PETHICK LAWRENCE asked the Secretary of State for the Home Department whether his attention had been called to the fact that persons in His Majesty's prisons could not obtain dental treatment other than extractions unless they were prepared to pay for it themselves; and whether, in view of the hardships thereby caused to poor prisoners, he would consider amending the regulations in this respect.—Sir WILLIAM JOYNSON-HICKS replied: No, Sir. In any case of acute pain necessary treatment is given; apart from that dental treatment, other than extraction, can only be given to a prisoner at the public expense if the medical officer considers that his health will be impaired by his waiting for treatment till his sentence has expired. The funds at the disposal of the Prison Commissioners will not permit of more being done in the prisons. At the Borstal institutions regular dental treatment is provided for all the inmates.

## FRIDAY, MAY 14TH.

### *Use of Ultra-violet Rays by Unqualified Persons.*

Colonel DAY asked the Minister of Health if his attention had been drawn to the increasing use of the ultra-violet ray by masseurs, barbers, and other unqualified persons; and, in view of the danger produced by over-dosage in certain cases, he would consider action with a view to the registration of all persons who utilise this method of treatment.—Mr. NEVILLE CHAMBERLAIN replied: I have not received any evidence of injury resulting from the use of ultra-violet rays by unqualified persons, but if the hon. Member is aware of any specific cases in which such injury has arisen, I should be glad if he would furnish me with particulars with a view to further inquiry.

## TUESDAY, MAY 18TH.

### NECESSITOUS AREAS AND PUBLIC HEALTH.

The House went into Committee on the Ministry of Health Vote, Mr. JAMES HOPE, chairman of committees, in the chair. The discussion was resumed on the Government's refusal of a grant from the Exchequer to relieve the financial burdens thrown upon local areas owing to the abnormal state of unemployment.

Dr. HADEN GUEST said that this problem of the necessitous areas was not really a problem at all, but a disease; it was part of the characteristic disease of society—the division between the haves and the have nots. Two things could be done in regard to it. One was attempts at immediate amelioration by means of subsidies of different kinds. But subsidies did not help the fundamental difficulty at all—namely, how to prevent the process of degeneration increasing and how to secure a return to the processes of health. The idea of labour colonies was on the right lines, but it did not cover the whole field. The real trouble was that the people in these poor and necessitous areas were employed in industries which were parasitic on the people engaged in them, and they in turn were parasitic on the community. These parasitic industries paid very low wages, and did not adequately provide for the employment of the people. They made profits and declared dividends because they were really subsidised out of public funds. The conditions of degeneration, both moral and physical, in these areas acted as centres of infection for the whole of the community. They were points in our social life through which the life of the community was being drained away. They ought to separate the sick from the well in this matter just as they did in the case of ordinary disease. They must separate the unemployed and healthy man from the unemployed man who was unhealthy. They should attempt to take out from these areas as large a number of healthy men as possible and set them to work on the land, either in this country or the dominions. Legislation was not required to deal with these questions as the Ministry of Health had large powers which they could exercise administratively for dealing with housing, public health, the treatment of defectives, the treatment of consumptives, and the treatment of other classes of the community who required to be segregated. They could solve the problem of the necessitous areas if they were willing to take a sufficiently big view.

After further discussion,

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said he could only repeat what he had said on the last occasion when this matter was discussed. A number of schemes for relieving the necessitous areas had been examined by a committee who had reported that not one of the schemes was practicable. This was not a time to come upon the Exchequer for further grants. Moreover, if they were to have a central fund distributed for this purpose, there must be central control, and that was what he wished to avoid and thought that he could avoid.

Progress was reported.

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THE LATE DR. R. WILKINS.—Dr. Richard Wilkins, of Preston, was the eldest son of Mr. T. R. Wilkins, of Longton, and was educated at the University of Edinburgh, where he graduated in medicine in 1905. He became house surgeon at St. Mary's Hospitals for Women and Children in Manchester and resident medical and surgical officer of the Preston Royal Infirmary. In 1909 he left the hospital and settled in practice at Preston, taking his F.R.C.S. at Edinburgh in the following year. At the Preston Royal Infirmary he was honorary assistant surgeon and he acted as secretary of the local Medico-Ethical Society; during the war he saw service as surgeon-lieutenant in the Navy. The high esteem in which Dr. Wilkins was held by the medical profession and people of Preston was shown at his funeral on April 27th. He was only 43 years of age and leaves a widow and one son.

MEDICAL CONGRESS AT BRUSSELS.—The seventh session of the Journées Médicales de Bruxelles will be held from June 26th to 30th under the patronage of the King and Queen of the Belgians. The programme is to include many subjects of topical interest covering the whole range of medicine, surgery, and gynæcology. During the mornings there will be practical demonstrations in hospitals and clinics. Those attending the Congress will be invited to a reception at the royal castle of Laeken. H.R.H. the Duke of Brabant will preside over a banquet in honour of Marshal Lyautey on June 26th, and there will be a gala performance at the opera. An international exhibition of the arts and sciences applied to medicine will be held during the Congress. The Journées Médicales is organised by the *Bruxelles-Médical*, and information may be had from the secretary-general, Dr. R. Beckers, 62, rue du Froissant, Brussels.

# Medical News.

UNIVERSITY OF LONDON.—At a recent examination the following candidates were successful:—

*Diploma in Psychological Medicine* (with special knowledge of Psychiatry).—Donald Cameron, Edward Emerson, Clement Perera, James Skottowe, and Robert Thompson.

*University of London University College Hospital Medical School.*—Mr. Richard Lake will give three Geoffrey E. Duveen lectures in otology at 5 P.M. on Thursdays in June. The subjects will be Deafness and Occupations (June 3rd) and Middle Ear Disease (June 10th and 17th), and the lectures will be open to medical practitioners and students.

A course of four lectures on the Constituents and Coagulation of Blood Plasma will be given by Dr. J. W. Pickering at King's College, London, on Tuesdays, May 25th, June 1st, 8th, and 15th, at 4.30 P.M. Admission will be free without ticket.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on April 29th, Sir John Rose Bradford, the President, being in the chair. The following were elected to the Fellowship on the nomination of the Council:—

Donald Rose Paterson, George Eric Campbell Pritchard, Sir Henry John Forbes Simson, Wilfred Edgecombe, Harold Pritchard, Frederick George Thomson, William Johnson, Charles Wilfred Vining, Richard Robins Armstrong, John Josias Conybeare, John Cuthbert Matthews, Julian Lionel Priston, John Alexander Drake, Francis Richard Fraser, Ambrose Thomas Stanton, Sir George Seaton Buchanan.

Nominated by the Council under By-law XL (*b*) and proposed to the College for election to the Fellowship: Arthur Edwin Boycott and John Thomson.

The Registrar moved, for the first time, the following temporary by-law in the event of the election of Dr. Stanton: "That Ambrose Thomas Stanton, being resident in Malaya, be *admitted to the Fellowship in absentia*, any by-law to the contrary notwithstanding."

The following candidates having satisfied the Censors' Board were proposed for election as Members:—

William L. Ackerman, Harold C. Beccle, Frank B. Byrom, Alexander M. Cooke, William E. Cooke, William S. C. Copeman, Edward R. Cullinan, Arthur J. Davies, Cyril F. Fernando, William Fletcher, Henry Fraser, Clifford J. Fuller, Birendra Nath Haira, Hubert W. Hetherington, Grosvenor C. Millis, Maurice Newman, Alan B. S. Owen, Sydney W. Patterson, Harry V. Phelon, Kenneth Playfair, Thomas W. Preston, Thomas A. Ross, Eric B. Strauss, Horace F. Turney, Gladys M. Wauchope, Joseph Whitby, John F. Williams.

An announcement was made that Mr. Dighton Pollock had accepted the office of Junior Standing Counsel and Dr. S. W. Wheaton that of delegate to the Jubilee Conference of the Royal Sanitary Institute in London in July, 1926.—It was reported that the late President, acting on behalf of the College, had expressed the willingness of the College to bestow a Fellowship, scholarship, or prize out of the income of some £8000 to be left as a legacy to the College for research work in Disorders of Metabolism, but with a preference for the study *of their occurrence* in children and adolescents, and particularly for diabetes.—Dr. H. Morley Fletcher was elected Senior Censor.—The President was appointed to represent the College at the celebration of the bicentenary of the Faculty of Medicine of the University of Edinburgh on June 10th and 11th next.—It was left to the President to appoint a Fellow to represent the College at the Twelfth Annual Conference of the National Association for the Prevention of Tuberculosis at Glasgow on July 1st, 2nd, and 3rd next.—Sir Humphry Rolleston was elected a member of the Executive Committee of the Cancer Research Fund.—A letter was received from the Royal Institute of Public Health asking the College to appoint delegates to their congress to be held in the city of Bristol from May 19th to 24th.—Sir Douglas Powell, Bart., offered to the College a replica of a portrait of his father, the late Sir Richard Douglas Powell, Bart., painted some 30 years ago by Spencer Watson, A.R.A., the replica to be painted by the same artist. This offer was accepted and the thanks of the College accorded to Sir Douglas Powell.—Reports were received from the Committee of Management.—The Registrar gave notice that at a forthcoming *general meeting* of the College he will propose, on behalf of the Censors' Board, additional regulations for the Membership Examination as follows:—

Every candidate for the membership shall furnish proof:

(1) That he has been engaged in work in a clinical laboratory for a period of at least three months subsequent to qualification, and that he has received instruction in modern methods of clinical pathology.

(2) That he has held a house physicianship at a hospital approved by the Censors' Board for a period of at least six months, or some other appointment involving personal responsibility for patients, which shall be considered by the censors as equivalent.

A proposal that the tenure of the office of President should be limited to three years was defeated after some discussion.—Some formal College business was transacted and the President then dissolved the Comitia.

A meeting of the Comitia was held on May 13th, the President, Sir John Rose Bradford, being in the chair.—The following, having been elected to the Fellowship at the meeting on April 29th, were admitted as Fellows:—

Sir Henry John Forbes Simson, Wilfred Edgecombe, Harold Pritchard, Frederick George Thomson, William Johnson, Charles Wilfred Vining, Richard Robins Armstrong, John Josias Conybeare, John Cuthbert Matthews, Julian Lionel Priston, John Alexander Drake, Francis Richard Fraser.

Under By-law XL (*b*).—Arthur Edwin Boycott, John Thomson.

It was resolved that Ambrose Thomas Stanton be admitted to the Fellowship in absentia.—Two Licences were granted.—Prof. Arthur J. Hall was appointed the representative of the College at the forthcoming celebration of the coming of age of the University of Sheffield.

The following additional by-law, having been moved for the second time by the Registrar, was passed:—

"If the Committee of Management of the Conjoint Examining Board or the Examiners shall find any circumstances in the character, conduct, or mode of practice of any candidate for examination which, in the opinion of a majority of either of them, renders such a candidate unfit to become a Licentiate of the College, they shall have power to decline to examine him or to continue his examination, until the decision of the College shall have been given on a report of the circumstances submitted to them by the Committee of Management or the Examiners."

The President then dissolved the Comitia.

The next examination for the Charles Murchison Scholarship in Clinical Medicine will be held on Monday, June 28th, and the days following. Candidates must send in their names to the Registrar not later than June 12th.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—Following the final examinations of the Conjoint Board held from April 6th to 20th licences to practise were conferred upon 165 men and 20 women who have passed the Final Examination in medicine, surgery, and midwifery, and have complied with the by-laws of the Colleges. The following are the names and medical schools of the successful candidates:—

M. O. Abdeen, Birmingham; C. E. Allen, Guy's; Marion L. Bainbridge, Manchester; J. C. H. Baird, St. Bart.'s; M. Barer, Univ. Coll.; R. E. Barrett, London; C. H. Bellerby, St. Bart.'s; P. G. Bentliff, Cambridge and Middlesex; C. E. Bigger, Cambridge and St. Thomas's; C. R. Birnie, King's Coll.; L. R. H. Birt, Guy's; A. D. Blackwell, Middlesex; B. Blaxill, Cambridge and St. Thomas's; J. L. Blonstein, Univ. Coll.; W. R. Blunt, St. Thomas's; J. D. Borham, Cambridge and Middlesex; Kathleen M. Bowman Manifold, Royal Free; D. G. Down, Guy's; G. J. O. Bridgeman, Cambridge and St. George's; G. H. Brown, Cambridge and Liverpool; H. Bruce, Leeds; P. H. Buckton, Cambridge and King's Coll.; H. A. Bulman, Middlesex; F. Bumjé, St. Mary's; A. Burlingham, Univ. Coll.; C. H. Burridge, St. Thomas's; H. A. Byworth, Oxford and St. George's; E. Carew-Shaw, St. George's; Elizabeth J. *Carpenter*, Royal Free; A. G. Chamberlain, St. Bart.'s; G. P. Chandler, Cambridge and St. Thomas's; J. C. K. Chilcott, King's Coll.; Enid Clarke, Royal Free; S. M. Coleman, St. Bart.'s; A. B. Connell, Cambridge and St. Thomas's; R. A. P. Corkery and J. G. Cox, St. Bart.'s; Lucy M. Cranage, Royal Free; G. H. Crisp, Oxford and St. Bart.'s; C. R. Croft, Oxford and St. Thomas's; B. R. Crossley, Univ. Coll.; Olive C. Crowley, Charing Cross; P. C. Cumber, Guy's; P. C. Datta, Calcutta; *T. L. Davies*, Oxford and London; J. E. Debono, Malta; J. H. de Jager, Cape and Guy's; T. S. Dewey, Cambridge and St. Thomas's; D. A. Dewhirst, St. Bart.'s; A. F. Downie, Birmingham; I. A. Dubinsky, Halle; R. A. M. Dyke, Guy's and Glasgow; W. G. I. Dyson, Manchester; R. P. S. Eddon, St. Mary's; A. G. Eddison, Cambridge and Univ. Coll.; G. Edwards, St. George's; G. C. Edwards, St. Thomas's; M. N. El Din, St. Bart.'s; E. Evans, Sheffield; E. S. Evans, Cambridge and St. Thomas's; J. P. *Evans*, Charing Cross; J. A. Eyres and A. B. Field, King's Coll.; R. A. FitzSimons, Charing Cross; R. G. Flower, Leeds; J. N. C. Ford, Oxford and St. Bart.'s; R. M. Forsyth, London; E. L. Fothergill, Oxford and St. Thomas's; A. R. French, London; J. Freudenheim, Charing Cross; Margaret L. A. Galbraith, Birmingham; W. L. Gilbard, St. Bart.'s; R. S. Glennie, St. Thomas's; L. D. Golomb, Odessa and Middlesex; J. Gray, Cambridge and Guy's; R. M. Greenop, *King's Coll.*; E. J. *Greenwood*, Cambridge and Guy's; T. W. Griffiths, Middlesex; H. L. Groom, Univ. Coll.; G. J. Gross, Cambridge and King's Coll.; K. H. A. Gross, Cambridge and St. George's; B. Guyster, London; A. F. W. Hall, Guy's; H. J. Heathcote, Cambridge and St. Bart.'s; T. H. Hobbes, St. Bart.'s; A. Hobson, Birmingham; L. E. Houghton, Cambridge and Guy's; J. L. Howard, Bombay and St. Mary's; L. G. Howe, St. Thomas's; M. L. Hutchinson, Guy's; D. Imber, Cape and St. Bart.'s; F. T. *Ioulanitoff*, St. Bart.'s; J. H. F. Jayasuriya, Ceylon and Middlesex; Iris A. J. Lloyd, Royal Free; D. M. Johnson, Cambridge and St. Bart.'s; R. G. Johnston, Adelaide and London; A. W. Kendall and

J. W. Kendall, King's Coll.; Eileen M. King, Univ. Coll.; S. N. Lahiri, Calcutta and Dundee; Alice B. Laker, Punjab and Charing Cross; J. R. E. Lee, Cape and Liverpool; H. P. Lehmann, St. Bart.'s; H. L. Lollo, Univ. Coll.; D. H. Lewis, St. Mary's; P. C. K. Lewis, Birmingham; L. Lipschitz, Berlin and Middlesex; G. H. Livingstone, King's Coll.; Elsie Lyon and Margaret B. Macdonald, Charing Cross; Mary A. C. MacHugh, King's Coll.; R. M. Maher, Liverpool; A. R. Marsh and C. W. Marshall, Guy's; Florence I. J. Masterman, Royal Free; A. N. Mathias, St. Mary's; C. A. L. Meredith, Middlesex; J. H. Miller, Birmingham; H. L. Milles, Cambridge and King's Coll.; J. M. Milloy, Glasgow and London; D. E. J. Mitchell, Manchester; E. D. Moir, Cambridge and St. Bart.'s; J. W. Monro, Cambridge and London; E. W. Morgan and J. E. C. Morton, St. Bart.'s; C. E. H. Moykopf, Guy's; M. Murad, Cairo and Birmingham; B. L. S. Murtagh, Birmingham; A. H. Musgrove, Cardiff and Guy's; H. P. Nelson, Cambridge and St. Bart.'s; C. S. Netscher, Bombay and St. Mary's; D. A. Newbery, Guy's; R. Okell, Oxford and St. Bart.'s; E. R. S. Owen, Liverpool; Evelyn M. Pakeman, Royal Free; Marion G. Palmer, Univ. Coll.; S. C. St. G. C. Parry, Cambridge and Middlesex; W. E. Parry, London; A. Patrick, Edinburgh; P. H. Perkins, London; E. K. Pritchard, St. Thomas's; Henrietta Procter, Charing Cross; M. M. Raouf, Cairo and St. Thomas's; W. H. G. Reed, Cambridge and King's Coll.; J. H. Ripka, London; M. E. D. Roberts, Cambridge and Birmingham; R. I. Roberts, Manchester; Janet McL. Robertson, St. Mary's; E. Robinson, Guy's; Alice L. Robson, Royal Free; E. H. Roche, Guy's; Sibyl D. Rodgers, King's Coll.; F. C. Roles, Cambridge and St. Bart.'s; R. P. Ross, Cambridge and King's Coll.; H. W. Sadler, Cambridge and St. George's; J. de la M. Savage, Oxford and St. Bart.'s; J. W. Schofield, Middlesex; J. W. Schollum, Guy's; J. A. Screech and S. T. Seccombe, St. Thomas's; M. Sendak, St. Mary's; Nancie A. Simmons, Charing Cross; J. F. Simpson, St. Mary's; W. E. Snell, Cambridge and Univ. Coll.; A. W. E. Soysa, King's Coll.; Beryl M. Stevens, St. Mary's; Dorothy E. Stewart, Royal Free; E. C. N. Strong, Birmingham; M. M. Su, Calcutta and Leeds; T. H. Taylor, Leeds; S. E. Theis, Guy's; J. W. de W. G. Thornton, Oxford and King's Coll.; G. P. Thorold, Oxford and St. Thomas's; O. R. Tisdall, Oxford and St. Bart.'s; E. M. Town-Jones, Cambridge and Leeds; Mary M. Tulloch, Charing Cross; W. J. D. Twort, Univ. Coll.; C. C. Ungley, Durham; E. F. C. Wadge, King's Coll.; H. Walden, Leeds; F. H. A. Walker, Cambridge and St. Bart.'s; E. Walsh, Manchester; Betty C. Waters, St. Mary's; T. E. Watkins, Cardiff; J. G. Wigley, Cambridge and St. Thomas's; J. I. Williams, Middlesex; H. Winch, St. Bart.'s; Eileen C. Wise, King's Coll.; W. R. Wood, Oxford and St. Thomas's; Rosa S. Wordsworth, Oxford and Charing Cross; H. P. Yew, Guy's; H. R. Youngman, Cambridge and St. Thomas's; and A. B. Zimbler, Dorpat and Middlesex.

The following candidates were approved in the subjects indicated, but are not eligible for diplomas:—

*Medicine.*—C. E. H. Anson, King's Coll.; Cecile H. D. Asher, Royal Free; M. I. Ashmawi, Cairo and St. Thomas's; B. Barling, Univ. Coll.; J. T. Barr and Grace Batten, King's Coll.; W. Blood, London; Susanna M. Bornman, Royal Free; J. W. Bottoms, London; R. D. W. Butler, Birmingham; S. Carnofsky, Guy's; Muriel G. E. Clark, Charing Cross; A. P. L. Cogswell, King's Coll.; W. K. Coombes, St. Mary's; E. Corner, London; H. A. H. D'Silva, King's Coll.; H. G. de Silva, Ceylon and Middlesex; C. W. L. de Souza, St. Bart.'s; Irene Dixon, Charing Cross; Leonora S. Evans, Royal Free; R. Evans, Guy's; G. L. Feneley, Bristol; C. Fernando, Ceylon; E. G. Frewer, London; Dorothy Gibbs, Charing Cross; B. W. Goldstone, St. Mary's; W. P. Greenwood and T. L. Griffiths, St. Bart.'s; Linnie A. Hamar, Charing Cross; P. E. T. Hancock, Cambridge and St. Bart.'s; W. V. Harke, St. Thomas's; S. T. Harris, Charing Cross; G. G. Hill, London; A. S. Hollins, King's Coll.; Nancy G. Howell, Univ. Coll.; T. C. Hunt, St. Mary's; M. K. Hussein, Cairo and St. Bart.'s; Mary R. Isaac, Madras and Royal Free; R. W. Kenney, London; W. A. Kerr and Isabella L. H. Livingstone, King's Coll.; D. G. Lloyd, London; Joyce McConnell, Royal Free; C. W. Mackenzie, London; J. H. Marshall, Birmingham; Mary S. Mitchell, St. Mary's; Anna P. Montgomery, Charing Cross; L. Moss, London; B. G. S. Mudali, Madras; Sybille L. Myers, Dorothy L. Neate, and Marjorie E. Parfitt, Royal Free; F. Parker, G. F. D. Perrott, and M. M. Posel, St. Bart.'s; H. J. Powell, St. Mary's; W. H. D. Priest, King's Coll.; Muriel F. Prout, Royal Free; E. J. Pye-Smith, Cambridge and Guy's; R. H. Rattray, Edinburgh; Hilda M. Richards, Royal Free; Margaret A. Ritchie, Charing Cross; D. A. Robertson, London; R. Roderick, St. Bart.'s; T. W. M. Ross, London; G. P. Roxburgh, St. Bart.'s; W. Samarasinghe, Middlesex; R. W. A. Simmons, St. Thomas's; B. A. Smith, King's Coll.; G. H. A. Soysa, Ceylon; J. R. C. Spicer, Guy's; J. B. Stauffer, London; M. M. Suzman, Durham; L. H. Thomas, St. Thomas's; A. C. Welch, Leeds; D. F. Whitaker, Univ. Coll.; E. G. Williams, Leeds; A. A. Wilson, St. Mary's; C. S. Wise, St. Bart.'s; and H. L. C. Wood, King's Coll.

*Surgery.*—G. E. Aling and J. H. Anderson, Guy's; J. M. Ashton, St. Thomas's; M. T. Aung, Guy's; L. G. Backhurst, St. Thomas's; P. Berry, Guy's; J. A. F. Bouloux, Univ. Coll.; M. D. Bower, St. Thomas's; H. Bown, Sheffield; R. C. Brock, Guy's; H. J. Burrows, St. Bart.'s; E. S. Caley, St. Thomas's; G. D. G. Cameron, Leeds; P. J. L. Capon and J. C. D. Carothers, St. Thomas's; F. H. Chick, Birmingham; Evangeline A. Clark, Royal Free; A. Cohen, London; Constance M. Corbett, Westminster; F. H. N. Cruchley, London; A. T. Curnow, Guy's; C. A. Day, St. Bart.'s; H. A. H. D'Silva, King's Coll.; J. H. A. Donnelland, St. Bart.'s; J. Dywien, Guy's; J. A. Edwards, St. Bart.'s; A. P. Farmer, St. Thomas's; A. W. Fawcett, Edinburgh; A. E. Fraser-Smith, St. Bart.'s; L. W. Freeman, St. Mary's; E. G. Frewer, London; J. F. Galloway, Liverpool; J. B. George, St. Thomas's; J. A. Gornall, Manchester; E. C. Grant, St. Mary's; E. D. Y. Grasby, Guy's; L. C. Gunasekara, King's Coll.; C. H. Harper and G. R. N. Henry, St. Thomas's; V. V. H. Hoskai, Guy's; M. F. Hope, King's Coll.; H. O. Hopkins, Middlesex; W. H. Hudson, St. Bart.'s; Isabelle R. Humphreys-Owen, King's Coll.; W. T. Hunt, St. Mary's; Roberta I. Hutchinson, Birmingham; B. S. Jarvis, Liverpool; A. J. Johnson, St. Bart.'s; E. C. Johnson, St. Mary's; A. N. Jones, Liverpool; W. T. Jones, Cardiff; B. Kaplan, Guy's; D. T. Lewis, Middlesex; H. W. Lewis-Philipps, Guy's; D. A. Llewelyn, St. Bart.'s; M. N. Menon, Guy's; Bertha I. Meyer, Royal Free; A. D. Miller and H. W. Morok, Durham; E. J. Newman, London; E. F. D. Owen, St. Bart.'s; D. Perkoff, London; C. L. Potts, Birmingham; E. I. Puddy, St. Mary's; Hilda H. Reeves, Birmingham; J. H. O. Roberts, St. Bart.'s; D. A. Robertson, London; J. A. Rushworth, Manchester; B. F. Russell, London; N. A. Saif and A. E. Y. M. Salama, St. Thomas's; H. N. Seymour-Isaacs, St. Bart.'s; H. L. Shimmin, Manchester; V. C. Shroff, Westminster; A. Signalowsky, Guy's; R. W. A. Simmons, St. Thomas's; J. W. Simpson, Manchester; B. D. Sindhwani, Durham; E. W. Skipper, London; Peggie P. Slater, Westminster; S. Smith, St. Bart.'s; J. B. Stauffer, London; W. Summers, Birmingham; M. M. Suzman, Durham; Mary Thomas, Univ. Coll.; S. R. Trick, Guy's; O. L. Truscott, D. P. Wailling, and A. S. Wallis, St. Thomas's; A. C. R. Walton, Birmingham; R. F. Ward, London; D. A. J. Williams and G. P. Williams, Cardiff; L. S. Williams, Guy's; and J. Woolf, St. Thomas's.

*Midwifery.*—Edna E. Adams, Birmingham; G. E. Aling, Guy's; A. M. Anderson, Edinburgh; V. F. Anderson, Westminster; C. E. H. Anson, King's Coll.; Laura G. Apps, London; H. C. Aslett, St. Mary's; B. Barling, Univ. Coll.; J. T. Barr, King's Coll.; Florence I. Beech, Birmingham; H. O. Blauvelt, Univ. Coll.; J. F. O. Bodman, Bristol and St. Mary's; E. J. Boschi, Leeds; J. A. F. Bouloux, Univ. Coll.; H. W. Bowen and M. D. Bower, St. Thomas's; R. C. Brook and S. B. Browning, Guy's; G. D. G. Cameron, Leeds; J. C. D. Carothers, St. Thomas's; C. N. Chandrachud, Bombay; J. A. Cholmeley, St. Bart.'s; E. T. Clifton, Guy's; A. P. L. Cogswell, King's Coll.; A. Cohen, London; Annie A. Corp, Royal Free; C. E. Corrigan, Manitoba; C. B. Crofts, St. Mary's; E. S. Curtiss, W. W. Darley, and T. G. Davies, St. Bart.'s; O. Dawood, Liverpool; C. A. Day, St. Bart.'s; Irene Dixon, Charing Cross; J. H. A. Donnelland, St. Bart.'s; M. H. O. Dyson, Univ. Coll.; A. S. El-Katib, St. Thomas's; H. M. Elliott, St. Bart.'s; J. P. Evans, Guy's; Leonora S. Evans, Royal Free; A. P. Farmer, St. Thomas's; A. W. Fawcett, Edinburgh; G. L. Feneley, Bristol; R. F. Fidler, Middlesex; Dorothy D. Forster, St. Mary's; G. W. S. Foster, St. Bart.'s; H. S. Gaussen, Guy's; J. B. George, St. Thomas's; Dorothy Gibbs, Charing Cross; R. M. Gilchrist, St. Bart.'s; E. D. Y. Grasby, Guy's; Rosaleen L. Graves, Charing Cross; C. H. Harper, St. Thomas's; S. T. Harris, Charing Cross; J. C. Hawkesley, Univ. Coll.; C. Hooper, London; E. E. R. Hopkin-James, Cardiff; Nancy G. Howell, Univ. Coll.; Roberta I. Hutchinson, Birmingham; Mary R. Isaac, Madras and Royal Free; Marie E. Jackson, Birmingham; D. Jacobson, St. Bart.'s; S. F. Jayawardene, Ceylon and Univ. Coll.; B. C. Jennings and Louise A. Johnson, Birmingham; L. Karnofsky, St. Thomas's; R. W. Kenney, London; K. D. Kumria, Univ. Coll.; A. H. Lafone, St. Mary's; P. N. Lahiri, Calcutta and Guy's; S. C. H. Lane, Guy's; Greta M. Langdon, Royal Free; C. J. Laviers, St. Bart.'s; Isabella L. H. Livingstone, King's Coll.; L. G. Llewellyn, Middlesex; G. E. Macdonald, London; R. M. B. Mackenna, St. Thomas's; P. C. Mallam, St. Mary's; E. T. Mankabadi, London; J. H. Marshall, Birmingham; Helen E. Mayfield, St. Mary's; Margaret Mitchell, Birmingham; A. W. J. Morgan, London; Barbara E. M. Morris, St. Mary's; Millicent Moseley, Birmingham; L. Moss, London; Kathleen A. Muir, King's Coll.; Sybille L. Myers and Dorothy L. Neate, Royal Free; Margaret B. Norman, St. Mary's; Catherine J. Ormerod, King's Coll.; E. F. D. Owen, St. Bart.'s; Marjorie E. Parfitt, Royal Free; F. G. Parker, Guy's; Margaret E. Peaker, King's Coll.; G. H. Pereira, St. George's; Gwyned M. Phillips, King's Coll.; Janet R. Phillips, Birmingham; R. K. Pillay, Madras; C. L. Potts, Birmingham; I. M. Preston, Manchester; P. R. Rainey, St. Bart.'s; Hilda H. Reeves, Birmingham; J. R. W. Richardson and T. M. Robb, Guy's; Florence E. Robinson, Royal Free; B. F. Russell, London; C. G. A. Sadler, St. Mary's; S. W. Savage, Univ. Coll.; M. Shaw and A. Signalowsky, Guy's; E. W. Skipper, London; B. A. Smith and Constance B. Smith, King's Coll.; S. Smith, St. Bart.'s; J. R. C. Spicer, Guy's; Joan Staddon, King's Coll.; H. M. S. Stanley, Cardiff; R. Stanton, Westminster; G. Steinberg, St. Mary's; W. Summers and F. J. Swinton-Esher, Birmingham; S. R. Trick, Guy's; O. L. Truscott and S. Tyagaraja, St. Thomas's; G. N. Unnithan, Univ. Coll.; I. Vallance, St. Mary's; D. P. Wailling, St. Thomas's; A. C. R. Walton, Birmingham; R. F. Ward, London; A. G. Welker, Westminster; L. A. F. Wiles, St. Thomas's; H. P. Williams, King's Coll.; R. M. Williams, Guy's; T. P. Williams, St. Bart.'s; and H. L. C. Wood, King's Coll.

HARVEIAN SOCIETY OF LONDON.—The date of the annual dinner of this society has been altered from Thursday, *June 10th, to Thursday, June 17th.*

ROYAL SOCIETY OF MEDICINE.—The society's *house and library will be closed on Saturday,* May 22nd, and Monday, May 24th.

BOLINGBROKE HOSPITAL.—Sir James and Lady Carmichael have announced their intention of presenting to this hospital at Wandsworth Common a *fully-equipped* children's ward of 22 beds and a freehold house to be used as a nurses' home

THE first International Congress of Sexuology will be held at Berlin from Oct 11th to 15th, 1920, under the auspices of the International Society of Sexuology All aspects of the subject will be discussed. Further information may be obtained from Dr Moll, 15, Kurfürstendamm, Berlin W

PEOPLE'S LEAGUE OF HEALTH.—The fifth travelling scholarship prize awarded by the People's League of Health *in connexion with the Sims Woodhead series of educational* health lectures has been won by Mr G R. Watt, assistant master at *Stowey* Open-air School.

BRITISH SOCIAL HYGIENE COUNCIL.—The annual *general meeting will be held at 1* Wimpole-street, London W on June 18th at 3 15 P.M. It is announced that the conference on Congenital Syphilis and the Display of a Medical Film in connexion with the Nation's Health Exhibition at Leicester will now take place on Thursday June 3rd, *instead of* on May 20th as was previously arranged.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The Cavendish lecture on Vision and Evolution will be delivered by Prof G Elliot Smith, F R.S., on Friday, May 28th at *8.30 P.M., at the* Kensington Town Hall and will be followed by the annual conversazione Reception by the President at 8 P.M. Tickets may be *obtained for* members of the medical profession and their friends through members of the society

AT the annual convention of the American Medical Association and its medical exhibition on scientific subjects the gold medal was awarded to Dr Aldo Castellani, who recently delivered the Gehrman memorial lectures at the University of Illinois. The award 'was based on the excellent investigation in comparatively unexplored fields of medicine and for the perfection of the display' of specimens.

ST MARY'S HOSPITAL INSTITUTE OF PATHOLOGY AND RESEARCH.—The remaining lectures of the course on Pathological Research in its Relation to Medicine will be as follows; Prof David Wilkie on the Functions of the Bile Passages in Relation to their Pathology (May 27th); Prof. Joseph Barcroft on Recent Work on *the Spleen (May 31st)*; Dr Charles S. Myers on Freudian Psychology (June 3rd); Dr John Freeman on the Pathological Mechanism of the Asthma Syndrome (June 10th); and Mr J E. Barnard on the Microscopy of Filterable Viruses (June 17th). The lectures are open to all members *of the medical profession* and medical students without fee They are held in the lecture room of the Bacteriological Department at 5 P.M.

HERBERT JONES TESTIMONIAL FUND.—The following is a further list of subscribers to the fund *being raised* as a testimonial to the public services of Dr Herbert Jones, M O H for the Herefordshire combined districts who is retiring *on account of ill health.* A previous list appeared in our issue of May 1st

*£5.*—Dr J C. Thresh.*

*£3 3s.*—Dr R. Veitch Clark.*

*£2 2s.*—Drs. W F Corfield,* R. A Dunn (Hertford) W Foster (Shipley), Lieut.-Colonel F E. Fremantle M.P., Drs. C O Hawthorne (London) W H. Hill (Oxford) A B McMaster,* H Meredith Richards (Whitehall), Sir John Robertson,* C.M.G., O B.E. J Williamson *(Epsom).*

*£1 1s.*—Dr G C Anderson (British Medical Association) Surg Captain C W Andrews,* O.B.E., R.N., Drs. E G Annis,* H W Barnes *(Hereford)* W Benton,* C S. Brebner (Richmond, Surrey), W. D Carruthers,* W F Dearden,* C E. Douglas (Cupar-Fife) L A Drake (Cradley), A Mearns Fraser,* Nicholas Gebbie,* A. Gilmour (Wimbledon), C. R. Gibson (Guisborough) R. Ashleigh Glegg,* W L. M. Goldie,* O B E., W Grugeon,* A. Wellesley Harris,* J Howard Jones,* Prof. T Eustace Hill, O B E. (Durham) Dr S T. R Jordan (Brecon), Prof H. Kerr,* O B E., Drs. A. J Laird,* John F McDonald,* T S. McIntosh,* C Killick Millard,* S. C. Mostyn,* A. A. Munson,* G H Pearce (Batley) R. W C. Pierce (Guildford), R. M. F Picken,* A M. N Pringle,* Maitland Radford,* T Rhind,* J A. Simpson,* W Sisson,* R. D Smedley,* C *O.* Stallybrass,* John Tate,* A. H Wear (Mansfield) Alfred L White (Wellington), H. Gibson Ward,* J B Wilkinson,* Sir Dawson Williams, C.B E., E. Colston Williams,* Robert Williams (Kingsland).

*10s. 6d.*—Drs Cyril Banks (Halifax) J H. Garrett (Cheltenham) M C R. Grahame,* J P Litt,* Algernon E. L. Wear, C.M.G (Leeds).

Those marked with an asterisk per the *Medical Officer*

CHINA MEDICAL ASSOCIATION.—The Eighteenth Biennial Conference of the China Medical Association will be held at Peking from August *31st to Sept. 8th* The executive secretary is Dr James L. Maxwell

MEDICAL GOLFING SOCIETY.—In the *final* of the Spring Tournament, Mr Joseph Cunning defeated Dr E. Ravensworth Hart at the *nineteenth hole, thus winning* the T P Kolesar cup.

RELIGIOUS SERVICES AT ST GEORGE'S HOSPITAL.—That the patients may take part in the religious services, a microphone has been installed in the chapel The patients in the wards listen by means of the ordinary receiver and head phones.

UNIVERSITIES' LIBRARY FOR CENTRAL EUROPE.—The report on the fifth year's work of the Library draws *attention* to a desire in the new countries of Europe for a knowledge of British culture and institutions An appeal is made *for gifts* of books to be *distributed amongst* needy universities and educational bodies abroad. Such gifts it is suggested, have a stabilising effect on international relations for they can only lead to a spirit of toleration and common intellectual advancement. Funds are also needed, and any *contributions may be sent* to the hon. secretary, Mr B M Headicar, at the London School of Economics, Houghton-street, Aldwych London W C. 2

BELFAST HOSPITALS.—Lady Craig, the wife of the *Prime Minister of Northern Ireland,* is trying to raise £25 000 towards the rebuilding of Belfast Samaritan Hospital for Women "The accommodation is hopelessly inadequate the equipment pathetically out of date, and the quarters for the nursing staff deplorably insufficient," *while the medical staff work under the heaviest handicaps.*—Belfast Hospital for Sick Children is to be rebuilt at a cost of £80 000.—At the *annual meeting* of Belfast Ophthalmic Hospital it was stated that *one* patient in every five is operated upon, and that the old Irish prejudice against sending children to the hospital is passing away

EPSOM COLLEGE.—The seventy-third annual general meeting of the Governors of Epsom College will be held on Friday, June 25th, at 49, Bedford-square, London, W C The *health* of the school during the year under review has been satisfactory, except for minor epidemics of chicken pox and mumps in the *Michaelmas* term. The general social life has maintained a high standard, and all sports—cricket, football gymnastics fencing, boxing, and fives—*have been* keenly followed. Since the last annual general meeting E. L. Clarke has been awarded the Senior Open History *Scholarship of £80* per annum at Clare College Cambridge; 13 boys entered for the First Examination for Medical Degrees as follows: London, 11 candidates, of whom six were successful and five were partially successful; Cambridge, three candidates, of whom two were successful in all four parts, and one was successful in one part Eleven candidates presented themselves for the London University Higher School *Examination, of* whom four were successful two were successful in three parts, two in two parts, and one in one part. Five candidates entered for the *Intermediate* B.Sc Examination through Higher Certificates, of whom four were successful. Of 72 boys who presented themselves for the *London University* General School Examination 60 gained school certificates, including four with honours 42 of whom gained exemption from *matriculation.* The distinctions gained in individual subjects numbered 51. One boy was successful at the Conjoint Board Pre-Medical Examination, and 25 boys obtained the War Office Certificate 'A.' Last year the Armstrong Scholarship was awarded to H. V A. Franklin the Da Silva *Exhibition* to C. L. Heanley, the Stone Scholarship to D S. Clogg, and the Jenks Memorial Scholarship to C Ive The St. Bartholomew's Hospital Scholarship was awarded to W D Coltart the St. Mary's Hospital Scholarship to J S Cotman the University College Hospital *Scholarship, together* with the Carr Exhibition which goes with it, to J C. S. Wells, the Middlesex Hospital Scholarship to R. G G Evans, and the *London Hospital* Scholarship to D C McClure Those wishing to send their sons to the College should give immediate notice to the head master *in order* that their names may be entered on the waiting list which is now unusually long and is steadily increasing

*New Benefactions.*—The Council of the College reports the establishment of two new benefactions. The late Dr James Taylor left the sum of £1000 to establish a scholarship in memory of the late Rev W A. Thomas, for many years a master at the College This scholarship will be devoted to the furtherance of the education of any specially meritorious boy whilst still a pupil at the College, in any way that the Council acting on the advice of the head *master* may consider desirable The late Miss Mary Elizabeth Dunn left by her will a sum of £850 New Zealand 4 per cent. Inscribed Stock to institute a "Robert Dunn" Annuity of £32 a year for the oldest unsuccessful unmarried candidate at the last election of a 'Morgan' Annuitant

THE Homœopathic Hospital, London, is closing for three months from June 1st to Sept. 1st for extension. It will be open until May 29th for treatment.

THE Oldham Health Committee has accepted an anonymous donor's offer of a building and equipment for orthopædic and sunshine treatment costing about £4000.

TOUR OF ITALIAN HEALTH RESORTS.—The annual medical tour of Italian health resorts will be held from Sept. 12th to 28th. Among the places to be visited are Abbazia, Grado, the Lido, Abano, Roncegno, Levico, Merano, Riva, Gardone, and Salsomaggiore. The number of participants is limited to 200. A limited number of places are reserved for relatives of doctors making the tour. Further particulars may be had from the Tourist Office of Italian State Railways, 12, Waterloo-place, London, S.W. 1.

STUDENT RIVALRIES IN "RAG" COLLECTIONS.—Students of the University of Glasgow and of the extra-mural colleges have issued a challenge to English universities regarding the collection of money for charities on "rag day." The Glasgow students on Jan. 16th collected £10,000 for local charities, and according to the University magazine it has come to their knowledge that Manchester students claim to have beaten the Glasgow record by £500. After consideration the Glasgow students have decided to challenge certain English universities and university colleges to raise next session by their gala day or week a sum which will exceed that collected by Glasgow. The challenge is not directed against any of the Scottish universities. Certain conditions are laid down, one being that all money collected shall be money which, but for the students' efforts, would not have found its way to charity.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—At the annual general meeting of the Fund, over which the Prince of Wales presided at St. James's Palace on May 14th, Lord Burnham, as chairman of the Propaganda Committee, said that though the net income of the Fund was not large, its indirect results were prodigious. He stated that a cheque had been received in appreciation of the work of the British Broadcasting Company during the strike. The meeting decided to offer assistance from the King's Fund towards providing pensions for hospital officers and nurses; a maximum sum for seven years of £20,000 a year, or 25 per cent. of the expenditure of the hospitals on the approved scheme, whichever is the smaller; this amount is to be provided as far as possible by means of contributions obtained by a special appeal in selected quarters, the contribution to be increased if sufficient funds are realised by such appeal. The Prince of Wales said that he was glad to hear from the treasurer, Lord Revelstoke, that the record distribution of £245,000 was met out of the year's income, and that there was probably enough margin to maintain that total undiminished in future years if a fair amount was received from legacies. Although the hospitals had suffered financially from recent events, His Royal Highness trusted that there would be a general determination to see that the loss should be only temporary. He read a message from the King in which His Majesty expressed his great satisfaction with the past year's working of the Fund, a result which he hoped would be repeated in 1926.

WIDOWS', ORPHANS', AND OLD AGE CONTRIBUTORY PENSIONS ACT.—The Minister of Health has issued a statement drawing attention to the conditions on which old age pensions may be granted under the Contributory Pensions Act, 1925. The position is that from July 2nd, 1926, old age pensions at the full rate of 10s. a week will be payable without any inquiries about means or nationality to men and women who are then at least 70 years of age and have been continuously insured under the National Health Insurance Acts from April 29th, 1925, to the date of their seventieth birthday. Persons who become 70 between July 2nd, 1926, and Jan. 2nd, 1928, and who have been insured from April 29th, 1925, until the age of 70 will be entitled to pensions at the full rate of 10s. a week on attaining the age of 70. The person must, however, have been resident in Great Britain or Northern Ireland for the two years immediately before the date on which the pension would become payable, and his (or her) last employment (except temporary employment) must have been in Great Britain or Northern Ireland. The wife of an insured man who is himself entitled to a pension is also entitled to a pension of 10s. a week in right of her husband's insurance if she is at least 70 years of age, or on reaching that age after July 2nd, 1926; but if the marriage took place after April 29th, 1925, a pension will not be payable to the wife in right of the husband's insurance until five years after the marriage, unless she was in receipt of a widow's pension immediately before marriage. A woman who obtains an old age pension in right of her own insurance cannot also claim a pension in respect of her husband's insurance. A leaflet explaining the position in greater detail can be obtained at any post office.

THE Summer Session of the General Medical Council will open on Tuesday, June 1st, when Sir Donald MacAlister, the President, will take the chair at 2 P.M. and give an address.

DR. F. J. BROWNE, lecturer in clinical obstetrics at the University of Edinburgh, has been appointed, as from July 1st next, to the London University chair of Obstetric Medicine, tenable at University College Hospital Medical School.

LEICESTER ROYAL INFIRMARY.—The reconstructed X ray department was opened on April 22nd by the Mayoress of Leicester. Dr. A. E. Barclay, of Manchester Infirmary, delivered an address for which Mr. Cecil Marriott and Mr. W. J. Cumberlidge proposed a vote of thanks. The cost of the new department is about £6500.

MEDICAL STUDENTS AT DROITWICH.—A party of some 30 medical students from Birmingham University, under the guidance of Dr. Douglas Stanley, visited Droitwich on May 15th, and were conducted over the brine baths by local members of the medical profession, the methods of treatment being fully explained to them.

CHELSEA CLINICAL SOCIETY.—A meeting of this society was held on April 20th. In the absence of the President, Dr. Gordon Lane occupied the chair, and a discussion on the Treatment of Late Syphilis was initiated by Prof. John Eyre and continued by Dr. C. E. Sundell. It was generally agreed that the injection of salvarsan or its allies was of great benefit in the amelioration of symptoms of general paralysis and locomotor ataxy, and that in some cases it effected an apparent cure. One or two speakers laid stress on the importance of treating syphilitic women during pregnancy, even though they might show no signs of the disease. The importance of bismuth preparations was urged by more than one speaker, who rated its value in the treatment of late syphilis as at any rate equal to that of mercury and potassium iodide.

ROCKEFELLER MEDICAL FELLOWSHIPS.—Rockefeller Fellowships for the academic year 1926–27 will shortly be awarded by the Medical Research Council, and applications should be made not later than June 10th, 1926. The Fellowships are provided from a fund which the Rockefeller Foundation has entrusted to the Medical Research Council. They are awarded by the Council to graduates who have had some training in research work in the primary sciences of medicine, or in clinical medicine or surgery, and are likely to profit by a period of work at a university or other chosen centre in the United States before taking up positions for higher teaching or research in the British Isles. A Fellowship will have the value of not less than £350 a year for a single Fellow, with extra allowance for a married Fellow, payable monthly in advance. Travelling expenses and some other allowances will be made in addition. Full particulars and forms of application are obtainable from the Secretary, Medical Research Council, 15, York Buildings, Adelphi, London, W.C. 2.

ROCKEFELLER GIFTS.—The Rockefeller Foundation has given £15,000 to St. Thomas's Hospital, London, towards the building of new laboratories. It is announced that Mr. John D. Rockefeller has given £35,000 to the medical faculty of the University of Strasbourg.

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.*

## SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, May 25th.—5.30 P.M., MEDICINE. Annual General Meeting. Dr. P. J. Cammidge: Pituitary Glycosuria. Dr. O. Leyton: Hypoglycæmia.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Annual General Meeting. Prof. G. H. Wooldridge: Some Diseases of Meat and their Relation to Public Health.

THURSDAY.—8.30 P.M., UROLOGY. Annual General Meeting. Mr. E. T. Hammond: The Functions of the Testes after Puberty. Mr. Ralph Thompson: On Ectopia Vesicæ. In connexion with the latter paper, patients will be shown by Sir John Thomson-Walker, Mr. Ralph Thompson, Mr. Macdonald, and Mr. Morson to illustrate the results of operation.

FRIDAY.—5 P.M., STUDY OF DISEASE IN CHILDREN. Annual General Meeting. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Annual General Meeting. Fleet Surgeon W. E. Home, R.N.: The Deaths of Merchant Seamen in 1924.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, W.
FRIDAY, May 28th.—8.30 P.M. Mr Johnston Abraham Marriage and Gonorrhœa. Followed by discussion.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL INSTITUTION, Albemarle-street, W
FRIDAY, May 28th.—9 P.M. Aims and Methods of Therapeutic Research Sir Almroth Wright.

ST. MARY S HOSPITAL INSTITUTE OF PATHOLOGY
THURSDAY, May 27th.—5 P.M., Prof David Percival D Wilkie The Functions of the Bile Passages in Relation to their Pathology.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W C.
TUESDAY, May 25th.—2 P.M., Dr Walshe Out patient Clinic. 3.30 P.M., Mr. Just Demonstration of Methods of Testing the Acoustic Nerve.
THURSDAY—2 P.M., Dr Kinnier Wilson Out patient Clinic. 3 30 P.M., Dr Riddoch: Clinical Significance of Spastic Paraplegia.
FRIDAY—2 P.M., Dr Adie: Out-patient Clinic. 3 30 P.M., *Dr Collier Cerebral Vascular Disease*

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital Leicester-square, W C
TUESDAY, May 25th.—5 P.M., Dr H. MacCormac Acne Vulgaris.
THURSDAY—5 P.M., Dr H G. Adamson: Lichen Planus.

UNIVERSITY OF SHEFFIELD POST GRADUATE CLINICS.
FRIDAY, May 28th.—3 30 P.M. (at the Royal Infirmary), Dr Barnes Heart Cases.

# Appointments.

DAVIDSON, J F, M.B., Ch.B. Aberd., D.P.H has been appointed Assistant Medical Officer of Health for the County of Dumfries.

DEARNLEY, GERTRUDE, M.D B.S. Lond. Honorary Gynæcologist to the Royal Free Hospital.

HUNTER, J B. F R.C S. Eng., Honorary Surgeon to the Royal Chest Hospital, City road.

OWEN, E. A., D Sc. Lond., a Professorial Chair in Radiology at Bangor

Paddington Green Children's Hospital: KOHNSTAM, G L. S., M.R.C.S., L.R.C.P Lond., House Physician, TINGLEY, P R., M B., Ch.B Edin., House Surgeon.

Westminster Hospital JONES, A. M., M.B., Ch.B., Obstetric Registrar and Tutor; LEVERS, A. H., M.R.C.S., L.R.C.P Lond., BEVAN, J G., M.R.C.S., L.R.C.P. Lond., House Physicians NORMAN, G A. H., M.R.C.S., L.R.C.P Lond., SILVERSTONE, J., M.R.C.S., L.R.C.P Lond., House Surgeons

# Vacancies.

*For further information refer to the advertisement columns.*

*Bath, Royal United Hospital.*—H.S At rate of £120

*Belfast, Queen's University*—(1) J C. White Lectureship in Bacteriology (2) J C White Lectureship in Bio-Chemistry

*Birmingham General Dispensary*—Res. Holiday Locum. £9 9s. weekly

*Birmingham University Faculty of Medicine*—Clin. Teacher in Mental Diseases.

*Bolton Infirmary and Dispensary*—Res. Surg. O £350 Two H.S.'s, each £150 Also Asst. H.P £100

*Bolton Union Townleys Hospital.*—Med Supt £900 Second Asst. M O £225

*Cambridge, Addenbrooke's Hospital.*—H.S. and H.P Each at rate of £130

*Cambridge University Pathological Laboratory*—John Lucas Walker Studentship £300

*Charing Cross Hospital*—Asst. Phys to Skin Dept.

*Chelsea Hospital for Women, Arthur-street, S W*—Jun. H.S At rate of £100 Also Sen. H S At rate of £120

*City of London Maternity Hospital, City-road, E C*—Asst Res M O At rate of £80

*Coventry and Warwickshire Hospital.*—Fourth H S. £125

*Cumberland County Council.*—Asst. County M.O H £800

*Derbyshire Education Committee*—Two Asst. School M.O's Each £600

*Dreadnought Hospital, Greenwich.*—Phys

*Durham County Council Education Department*—Asst. School M.O £600

*Elizabeth Garrett Anderson Hospital, 144, Euston-road N W*—H.P, Obstet Asst., two H.S.'s. All at rate of £50 Also Asst. P

*Evelina Hospital for Children, Southwark, S.E*—H P At rate of £120

*Gloucester, Royal Infirmary and Eye Institution.*—Asst H.S £150

*Hertford County Hospital.*—H.P At rate of £150

*Hospital for Sick Children, Great Ormond street, W C.*—H P and H S. Each at rate of £50

*Hull, Tuberculosis Sanatorium Cottingham, E Yorks.*—Res M.O £304 13s. 10d

*Kensington Tuberculosis Dispensary 119 Ladbroke-grove, W*—Temp Tuberculosis O 33 guineas for one month.

*Lanark County, Dist of the Middle Ward.*—Asst. M.O £500

*Leicester Royal Infirmary*—H S At rate of £125.

*Liverpool Eye and Ear Infirmary*—H.S. £100

*London Hospital, E*—Hon. Asst. Anæsthetist.

*London Lock Hospital, 91, Dean-street, W*—Clin. Asst in Out patients' Dept.

*London School of Hygiene and Tropical Medicine*—Research Studentships in Tropical Bacteriology and Pathology and in Helminthology Each £350

*Maidstone, Kent County Ophthalmic Hospital.*—Res. Surg O £750

*Manchester, Hospital for Consumption, &c*—Hon. Asst. P

*Manchester, Northern Hospital for Women and Children*—Sen. H.S. and Jun. H S £130 and £100 respectively

*Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.*—H S. At rate of £300

*Mauritius Government Mental Hospital, Beau Bassin.*—Asst Med. Supt. 7600 rupees.

*Mildmay Mission Hospital, Austin-street, Bethnal Green E*—Sen. Res M.O £140 Jun. Res M.O and Asst. Cas O Each £100

*Miller General Hospital for South East London, Greenwich-road, S.E*—Res. Cas. O £150 Also H S. £125

*Penshurst Kent Cassel Hospital for Functional Nervous Disorders* Jun. Res. M O £250

*Preston and County of Lancaster Royal Infirmary*—Res. Surg O £300

*Preston, Lancs County Mental Hospital, Whittingham.*—Temp M.O £7 7s. weekly

*Queen Charlotte's Maternity Hospital, Marylebone road, N W*—Asst Res. M.O. At rate of £80

*Queen Mary's Hospital for the East End, E*—H.P, two H.S's, Obstet H S., and one H.P, and Cas. O

*Richmond, Surrey Royal Hospital*—Hon. P to Out patients.

*Royal College of Surgeons of England*—Election to Court of Examiners and Election of Professors and Lecturers

*Royal Free Hospital, Gray's Inn road, W C*—H.S's, H P's, Asst. Cas. O, &c.

*Royal Northern Hospital, Holloway, N*—Ophth. S.

*Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E*—H.P and H.S. At rate of £100 Also Hon.P.

*St George's Hospital, S W*—Radiologist £100

*St John's Hospital for Diseases of Skin, Leicester square, W C*—Hon. Asst. P

*St Mary's Hospital, W*—First Asst. Pathologist £500 Surg Registrar, £200 Also Clinical Asst

*Sheffield Royal Hospital*—Sen. Cas. O £150

*Sheffield Union Hospital*—Res Asst M.O £350

*South London Hospital for Women, South Side, Clapham Common S.W*—Asst. P

*Stockport Infirmary*—Res. Surg. O £350

*Stoke-on Trent City*—Asst M.O £500

*Swansea Hospital.*—H S. for Ophth. and Aural Depts £200

*Throat Hospital Golden square, W*—Res H S. £100

*University of London.*—University Studentship in Physiology £50.

*West London Hospital, Hammersmith, W*—H.P, H.S, Aural H.S. and Res. Cas. O Each at rate of £100

*Westminster Hospital, Broad Sanctuary, S W*—Asst. P for Diseases of Children.

*Worcester County and City Mental Hospital*—Jun Asst. M.O and Pathologist £300

The Secretary of State for the Home Department announces a vacancy for a Medical Referee under the Workmen's Compensation Act, for the Districts of the Biggleswade Huntingdon, Peterborough, St Neots, Thrapston, and Oundle County Courts (Circuit No 35). Applications should reach the Private Secretary, Home Office, not later than June 10th

# Births, Marriages, and Deaths.

## BIRTHS.

ALDRED-BROWN —On May 7th, at Gloucester Row, Weymouth, the wife of Dr G R. P Aldred Brown, of a daughter

LANGDALE KELHAM.—On May 11th, at Upper Richmond road, S.W, the wife of Dr Roy Langdale-Kelham, of a son

## MARRIAGES

CAREY—ROSS —On May 12th, at Marylebone Presbyterian Church, W de Lisle Carey, M.R.C.S., L.R.C P, to Winifred Margaret eldest daughter of Mr and Mrs Leonard Ross, of Maida Vale, W

LYONS—MORRIS —On May 12th at Queen-street Congregational Church Wolverhampton, James Lyons, M.D, F R.C.S, to Dorothy Irene Pugh, elder daughter of Mr and Mrs Morris of Parkdale, Wolverhampton.

## DEATHS

GARDEN —On May 14th at the Brompton Hospital, Elizabeth Ellen wife of the late Murray Garden, M.D, aged 26

GUPPY —On April 23rd at Martinique on the return voyage from Tahiti, Henry Brougham Guppy, F R.S. F.R.S.E., F L.S, M B., of the Red House Fowey

KING —On May 12th, at The Knoll, Horsham, Thomas William King, M.D, aged 84

REID —On May 14th Alexander Reid M.D, aged 82

WILSON —On May 13th, at Abbey Mount, Torquay, Lindsay W Wilson L.D S R.C.S, in his 33rd year

*N.B —A fee of 7s. 6d. is charged for the Insertion of Notices of Births Marriages and Deaths.*

# Notes, Comments, and Abstracts.

## THE SMOKING HABIT AND MENTAL EFFICIENCY.

### AN INQUIRY INTO THE ASSOCIATION BETWEEN SMOKING AND SCHOLARSHIP.

By J. Rosslyn Earp, M.A. Camb., M.R.C.S. Eng.,
ANTIOCH COLLEGE, YELLOW SPRINGS, OHIO, U.S.A.

This inquiry is concerned not with the immediate effects of smoking upon mental processes, but with the effects, if any such there be, of a continued use of tobacco. A few studies of the effects of smoking in school and college students have been published. Though they are mostly inconclusive, a brief summary will be here presented (Table I.).

Table I.—*Previous Statistical Studies of Intelligence and Scholarship among Smokers and Non-smokers.*

| Number and type of observations. | Results. | | | |
|---|---|---|---|---|
| | S. N. Powers.[1] | | | |
| | Intelligence tests. | | | Scholarship grades. |
| High-school boys, 14 to 26— | Army alpha. | Miller. | Terman A. | |
| Non-smokers .. | 112·5 | 68·9 | 144·2 | 9·6 |
| Smokers .. .. | 98·6 | 57·5 | 122·9 | 8·7 |
| | E. L. Clarke.[2] | | | |
| College students, 201— | 68·5 % of non-smokers | Won honours in scholarship. | | |
| Smokers, 46·3 % | 18·3 % of smokers | | | |
| | George L. Meylan (Columbia).[3] | | | |
| | Average percentage marks— | | Percentage failures during first two years. | |
| | At entrance. | During two years. | | |
| Students, 223— | 90 .... | 66 | 7 | |
| Smokers, 115 .. | 89 .... | 62 | 10 | |
| Non-smokers, 108 .. .. | 91 .... | 69 | 4 | |
| Fraternity members, 66— | 85·0 .... | 59·1 | 12·8 | |
| Smokers, 49 .. | 84·0 .... | 56·6 | 14·4 | |
| Non-smokers, 17.. .. .. | 89·4 .... | 66·5 | 8·1 | |
| | M. V. O'Shea.[4] | | | |
| | Median standing.* | | Mean standing. | |
| | A | B | C | |
| (*a*) High-school boys, 1434, from 30 different cities. | 83·816 | 82·809 ± ·09 | 83·523 ± ·076 | |
| (*b*) 101 boys who smoke equivalent of 5 pipes weekly. | 82·375 | 81·409 ± ·34 | 82·000 ± ·275 | |
| (*c*) 40 boys, ditto, 10 pipes weekly. | 81·857 | 80·857 ± ·59 | 81·525 ± ·472 | |
| Difference between (*a*) and (*b*) .. | — | 1·40 ± ·35 | 1·52 ± ·20 | |
| Difference between (*a*) and (*c*) .. | — | 1·95 ± ·50 | 2·00 ± ·48 | |
| Number of observations not given. | Correlation between "smoking" and "scholarship," – ·51. | | | |

* If a number of observations are arranged in order of magnitude, the median is the value of the middle one. If there are 2n + 1 observations. the (n + 1)th gives the median; if there are 2n the median is the value midway between those of the nth and the (n + 1)th.

A = as given by O'Shea. B = as calculated by the author from O'Shea's figures. C = calculated by the author from O'Shea's figures.

Some of the results given in Table I. may not be highly significant, but the general tendency is in favour of the non-smokers and of the lighter smokers, and is confirmed by my own observations. O'Shea, whose study is probably the most notable of this kind, quotes more evidence from the literature pointing in the same direction.

### *The Present Investigation.*

The present research is a continuation, on somewhat larger and partly different material, of an investigation previously published,[5] into the effects of tobacco upon the students at Antioch College. In the former study cumulative scholarship was studied. This is open to the objection that when a non-smoker becomes a smoker his cumulative average continues to carry the grades which he made as a non-smoker. This would be a disadvantage if a causal relation happens to exist between low scholarship and smoking, a possibility which cannot be overlooked. In our previous study the numerical grades were based on the following equivalents.

| | | | | | |
|---|---|---|---|---|---|
| A .... | 7 | C .... | 3 | E .... | 1 |
| B .... | 5 | D .... | 2 | F .... | 0 |

We have in the present study preferred to reassess these grades as follows:—

| | | | | | |
|---|---|---|---|---|---|
| A .... | 5 | C .... | 3 | E .... | 1 |
| B .... | 4 | D .... | 2 | F .... | 0 |

This accounts for the generally lower average grades found in the present paper.

Antioch students may perhaps not unfairly be taken to represent a random sample of the college population of the United States, and that is the universe to which our conclusions must apply. The two groups, "smokers" and "non-smokers," include the great majority of men students who were present in college throughout the period under review—usually the academic year 1924–25. There is one respect, however, in which the sample of "smokers" is not truly random. We find that most of the students previously dropped for low scholarship were smokers, and therefore the remaining "smokers" (those considered in this study) include fewer of the very low scholarship group than a random sample should. The effect of this factor on the study of progressive decline in scholarship (involving a period of three years) may be considerable. It is to be noted that a correction of this factor, if that were possible, would strengthen all the conclusions to be drawn from this paper.

### *Smoking and Intelligence.*

The majority, though not all, of our students have received two intelligence tests. The Thurstone test is given before admission and is not under the direct supervision of the college. Of course, every effort is made to secure accuracy. The O'Rourke test was given at the college in the department of psychology, and the results may be depended upon absolutely.

The mean ratings of smokers and non-smokers are as follows:—

*Thurstone Test.*

| | |
|---|---|
| 167 smokers .. .. .. | 102·84 ± 1·27 |
| 165 non-smokers .. .. | 97·42 ± 1·15 |
| Difference .. .. .. | 5·42 ± 1·71 |

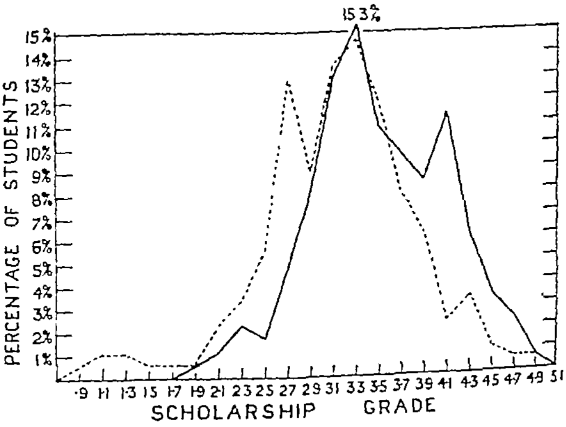
*O'Rourke Test.*

| | |
|---|---|
| 157 smokers .. .. .. | 70·72 ± 0·73 |
| 155 non-smokers .. .. | 70·05 ± 0·70 |

The difference in the O'Rourke test is less than the probable error. The difference in favour of the smokers in the Thurstone test is three times the probable error.

### *Smoking and Scholarship.*

Division of the group of smokers into sub-groups according to the amount smoked must be made by arbitrary rules and the group limits will be very roughly drawn. No account can be taken of the possible variations of toxicity of different brands of tobacco or of the wide variations in the size of pipes and the completeness of combustion. As in our previous study,[5] a light smoker uses two cigarettes, one pipe, or one cigar a day; a moderate smoker up to ten cigarettes, three pipes, or two cigars a day; and a heavy smoker more than this.



The mean grades of the different groups for the year 1924-25 are as follows :—

| | |
|---|---|
| A 170 non-smokers | 3 51 ± 0 03 |
| B 177 smokers | 3 14 ± 0·03 |
| (*a*) 44 light smokers | 3 19 ± 0·07 |
| (*b*) 56 moderate smokers | 3 33 ± 0·06 |
| (*c*) 77 heavy smokers | 3·00 ± 0·05 |
| (*d*) 100 moderate and light smokers | 3 23 ± 0·04 |
| Difference A and B | 0 37 ± 0·04 |
| Difference (*c*) and (*d*) | 0 23 ± 0·06 |

57 1 per cent of smokers and 31 8 per cent of non smokers failed to reach diploma grade (3 2) (see graph) The vertical ordinates in the graph show the percentages of smokers and non-smokers respectively who were in the grades marked on the horizontal axis. Students falling below diploma grade must improve their grade within a year or else leave college.

No student whose cumulative average is below diploma grade is allowed to graduate. Of 23 men students dismissed during the year for low scholarship 20 were smokers Of the 177 smokers, 111 are known to inhale the smoke, 50 are known not to inhale, and in 7 cases the information is lacking The mean scholarship grades of the inhalers and non inhalers are given in Table II The "expected mean grade is calculated by taking into account only the *quantity* of tobacco used irrespective of inhaling and weighting the mean grades already found for heavy, moderate, and light smokers by the numbers in these classes among the inhalers and non inhalers separately

TABLE II.

| — | Inhalers. | Non inhalers. | Difference between inhalers and non inhalers. |
|---|---|---|---|
| "Expected" mean grade | 3 12 ± ·06 | 3 19 ± ·06 | 0·07 ± ·081 |
| Observed mean grade | 3 04 ± ·04 | 3 32 ± ·05 | 0·28 ± ·067 |

The difference in favour of the non-inhalers is thus significant.

If we convert scholarship from a variable to an attribute by considering that all who fail to reach diploma grade (3 2) are afflicted with low scholarship we may then consider the association between the three attributes, low scholarship, heavy smoking, and inhaling

It would appear from Table III. that both "heavy smoking" and "inhaling" are associated with low scholarship, and to some extent independently; though the differences between the inhalers and the non inhalers are not statistically significant, they all point in the same direction The Antioch students have smoked for periods varying from one year up to 15 years. The correlation coefficient between scholarship grade and the length of time smoking has been practised is negligible (—·09 ± ·05) To test the same problem by another method I have determined for those students who had been at Antioch for three years or more the mean grade for each of the three years for both smokers and non-smokers :—

| | 1922-23. | 1923-24 | 1924-25 |
|---|---|---|---|
| Non-smokers 39 | 3 54 | 3 50 | 3 54 |
| Smokers 35 .. | 3 56 ± ·05 | 3 33 ± ·07 | 3 31 ± ·05 |

The difference in the case of smokers from— { 1922-23 to 1923-24 is 0·23 ± ·09
1922-23 to 1924-25 is 0·25 ± ·08

The decline is somewhat irregular and barely significant. This may be partly due to the fact that in the last year four students had to make special efforts to save themselves from expulsion.

TABLE III

| — | Heavy smokers. | | | Moderate and light smokers. | | | All inhalers. | All non inhalers. | All smokers. |
|---|---|---|---|---|---|---|---|---|---|
| | Inhalers. | Non inhalers. | All. | Inhalers. | Non inhalers. | All | | | |
| Above diploma standard | 22 | 6 | 28 | 27 | 28 | 55 | 49 | 34 | 83 |
| Below diploma standard | 41<br>*(65 1 ± 4·04 %) | 6<br>(50·0 ± 9 73 %) | 47<br>(62 7 ± 3 77 %) | 21<br>(43 8 ± 4 83 %) | 19<br>(40 4 ± 4·63 %) | 40<br>(42 1 ± 5 12 %) | 62<br>(55·9 ± 3 15 %) | 25<br>(42 4 ± 4 34 %) | 87<br>(51·2 ± 2 59 %) |
| Totals | 63 | 12 | 75 | 48 | 47 | 95 | 111 | 59 | 170 |

* The percentages are all taken on the totals in the bottom horizontal line

Difference of percentages below diploma grade between heavy smokers and moderate and light smokers among— { All smokers = 20·6 ± 6 1
Inhalers = 21 3 ± 6 3
Non-inhalers = 9·6 ± 10·0

Difference of percentages below diploma grade between inhalers and non inhalers among— { All smokers = 13 5 ± 5 4
Heavy smokers = 15 1 ± 10 5
Moderate and light smokers = 3·4 ± 6 8

*Discussion.*

To explain the association between the smoking habit and low scholarship there are three theories that seem to be worthy of consideration.

1 Scholarship demands the *exercise of attention* which cuts off the individual from his fellows. This solitude of mind is incompatible with the gregarious instinct. According to this theory the tobacco habit has only an incidental connexion with low scholarship by being related to the gregarious tendencies of man. The smoker smokes because it is a social habit. He has low scholarship because he is sociable If some disease yet undiscovered should strike the tobacco crops and sweep that vegetable from the face of the earth, those who now smoke would not, according to this theory, advance in scholarship They would continue to employ their leisure hours in social intercourse rather than in study The theory is supported by the observations of Dr Meylan, of Columbia though it does not suffice entirely to explain them, for the smokers in fraternities fared worse than the non-smokers in the same fraternities. I tested it for Antioch students by examining the association between smoking and membership in college societies. I found that 177 smokers provide 70 members and 113 memberships in college societies; 170 non-smokers provide 78 members and 144 memberships in college societies However, I do not press this fact as an argument against the theory because membership in an Antioch Society is often an indication of public spirit or of an altruistic "complex" rather than of the herd instinct Antioch has no fraternities.

2 *The Habit of Smoking Devitalises Ambition*—This is the theory which is expressed by Emerson in the following words "The believing we do something when we do nothing is the first illusion of tobacco" Whether the fumes of burning tobacco are poisonous or not there is no doubt that the habit once established gives rise to more or less craving for this form of indulgence. It is contended that in satisfying this craving other less insistent cravings, among them the craving for knowledge and scholastic success, tend to be neglected. The observations that "heavy smoking" is more closely associated with low scholarship than "light smoking, and that as time goes on the smoker's scholarship tends to decline are not out of harmony with this theory We should also expect to find the smoker's intelligence unimpaired, as, in fact we do

3. That some poison or poisons in the smoke acting upon the central nervous system produce a *deterioration of nervous tissue* leading directly to a lower mental output. This is the only theory as far as I can see, which would explain an independent association of "inhaling" with low scholarship The amount of time given to social intercourse by those who inhale surely cannot be greater than that given by those who do not inhale. The much greater absorption of the vaporised products of tobacco* is, indeed, the only obvious distinction which delimits the first group from the second This theory is also supported by the observations of the progressive decline in the scholarship of smokers and by the lower scholarship of the heavier smokers It is supported also by the nerve injuries known to be associated with excessive use of tobacco—e.g. amblyopia, deafness tachycardia—and by the nature of the poisons which tobacco is known to contain.

On the other hand, we have to remember that many men of great intellectual eminence and achievement have been smokers. We note, too that intelligence as measured by psychological tests is not affected by smoking. Moreover, if a chronic poisoning process of any considerable significance is taking place it is astonishing that the correlation coefficient between scholarship and the length of time of indulgence in tobacco is negligible

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* According to R. Heinz,[4] eight times more nicotine is absorbed in inhaling than in mouth smoking

On the whole, it seems likely that more than one, perhaps more than all, of the explanations ventured above are necessary to cover all the facts.

*References.*

1. Powers, S. N.: A Comparison of the Intelligence and Achievement of High School Boys who Smoke with those who do not, School and Society, 1921, xiii., 299.
2. Clarke, E. L.: Effect of Smoking on Clark College Students, Clark College Record, 1908, iv., 91.
3. Meylan, G. L.: Effects of Smoking in College Students, Popular Science Monthly, 1910, lxxvii., 171.
4. O'Shea, M. V.: Tobacco and Mental Efficiency, Macmillan Co. 1923.
5. Earp, J. R.: Tobacco, Health, and Efficiency, THE LANCET, 1925, i., 213.
6. Heinz, R.: Ueber die Giftigkeit des Tabakrauches ins besondere des Zigarettenrauches, Deutsch. Med. Woch., 1923, No. 10, p. 318.

## NATIONAL BABY WEEK COUNCIL.

THE report for 1925 of the National Baby Week Council is an encouraging record of advance in many directions. An increasing tendency is noted among local authorities to undertake continuous propaganda during a given period, by means of film displays, lectures, and demonstrations, while a considerable development of the Health Week movement also took place during the year, this being successfully combined in many places with Baby Week celebrations. Each year the Council, while drawing attention to the maternity and child welfare problem as a whole, selects certain aspects of that problem for special emphasis during the year. During 1925 the subjects thus selected were the problem of maternal mortality and morbidity in childbirth, and the psychological bases of character formation. A good deal of interest was shown by the Press in these somewhat technical subjects. The second Imperial Baby Week was held at the British Empire Exhibition, Wembley, from July 6th to 11th, and in connexion with this the Council held its second Imperial Competition, the Empire's Mother and Baby Competition. This competition included the mother as a competitor, her part consisting of answering three set questions on mothercraft appended to the score-sheet. The awards were made on the joint totals of marks of credit won by mother and baby. Three new films, "Empire Builders," "The Work of an Infant Welfare Centre," and "A Place in the Sun," proved popular. During 1925 the first International Congress on Child Welfare was held at Geneva under the auspices of the International Save the Children Fund, the National Association for the Prevention of Infant Mortality coöperating in this activity. Since, however, this necessitated the abandonment of the usual annual conference on infant welfare organised by the National Association, a summer school of maternity and child welfare was held by the Council during National Baby Week, when a large number of delegates and of private members attended from all over the country.

Baby Week is to be held this year from July 1st to 7th, the special subjects for discussion being the following: (*a*) the Care of the Toddler; (*b*) the Care of the Mother, Expectant, at Confinement, and General Postnatal Care; (*c*) the Father's Part in the Child Welfare Movement. Full particulars of this and of the fourth English-speaking Conference on Maternity and Child Welfare, which is to be held in London on July 5th, 6th, and 7th, may be obtained on application to the Secretary of the Council at 117, Piccadilly, London, W. 1.

## DR. KNOCK.

"Dr. Knock," in the translation of Mr. H. Granville Barker, which we noticed when it was published about a year ago,[1] is now delighting large audiences at the Royalty Theatre. Mr. Dennis Eadie, whose every gesture recalls the professional manner of the keen and efficient young specialist, gives a delightful interpretation of the title rôle. As a pure farce the piece is admirable, but to the medical critic it is surprising that so many of the reviewers should have seen in it nothing more. In the first place the character of the thrusting, unscrupulous Dr. Knock is by no means that of the ordinary get-rich-quick charlatan. It is true that at the beginning of his career he may have been chiefly impelled by the desire for gain, but by the end of the play, when he has transformed in three months a blatantly robust parish into a community of terror-stricken invalids in a condition of abject dependence on their medical dictator, the fascination of wielding unlimited power has taken hold of him. His monologue towards the close of the last act reveals him as an idealist who dreams of the universal reign of medical science over a world of people whose individuality is expressed purely in their clinical history-sheets. Starting with the truism that there is something wrong with every one of us, he has developed a marvellous intuitive flair for the best way of making each of his patients admit this flaw in their own constitution, and of keeping them in terror of its development and thus in thrall to himself. He called it diagnosis, but it was, of course, suggestion; diagnosis to him was the appreciation not of his patients' ailments, but of their suggestibility. The play shows him first exploiting an idea for his own ends, next succumbing to its fascination and its success, and finally pursuing it beyond all reasonable limits. The psychiatrist, looking beyond the last curtain, can see that it is only a matter of time before that idea masters him and drives him into a state of mental instability. The burlesque, applied to modern medical methods, may be extreme, but no practitioner with a sense of humour can see "Dr. Knock" and fail to recognise a certain distorted reflection of his professional self. The more experience the doctor has the more he realises that he can benefit hardly any of his patients without the aid of suggestion in some form. Every practitioner has had at one time or another to play the part of "Dr. Knock" in order to convince a patient with a painless lump that his life was in danger, and every public health officer has had to paint a vivid picture of the horrors of epidemic disease in order to persuade his community to submit to immunisation. The public gives periodical signs of resenting this, signs which range from bitterly unjust newspaper attacks on the profession to such harmless jests at its expense as this play.

## THE REVISED SYSTEM OF HOSPITAL ACCOUNTS.

King Edward's Hospital Fund for London, the Metropolitan Hospital Sunday Fund, and the Hospital Saturday Fund require that hospitals in London receiving grants from them shall adopt a uniform system of keeping accounts, and it is certainly desirable that all hospitals should publish their accounts on a standard basis so that their financial position may be compared. The Voluntary Hospitals Commission of the Ministry of Health restricts its grants to hospitals using the Revised Uniform System or other form of accounts approved by the Commission. The fourth edition of "The Revised Uniform System of Hospital Accounts" (published by Messrs. Geo. Barber, 23, Furnival-street, Holborn, London, E.C., price 5*s.* net, 5*s.* 4*d.* post free) which has just been issued will therefore be useful to all those who are interested in hospital finance. The principal feature of this system is that it provides for the complete separation of the Income and Expenditure on Maintenance Account from all other items; in the present edition the arrangement of the Income and Expenditure Account has been usefully revised. The way has also been prepared for the hospitals to develop an accounting system which, without much change in the published accounts, will enable them to ascertain the cost of each department. An appendix has been added dealing with the internal control of expenditure by quantity statistics, the budget, and departmental costs. Attention is drawn to new regulations and additions to existing regulations; all the regulations contained in the new edition should be adopted (beginning with published accounts for the year 1926) by all institutions applying for grants from any of the three funds. This publication would also be useful to those responsible for institutions other than hospitals.

## THE NURTURE OF INFANTS.

A LITTLE book[1] designed to provide mothers with detailed instructions on the feeding and upbringing of infants has reached us. The rules for management and clothing of the infant are excellent, and the lists of nursery requisites should be extremely useful. The method of feeding which Nurse Hill recommends is more open to criticism. All breast-fed babies are given one bottle of cow's milk in the day from the third week. For bottle-fed infants undiluted citrated milk, with the addition of sugar, is advocated as a routine diet from birth, and is varied by the addition of Glaxo after the first month. We doubt whether mothers of the infants will profit by taking the advice that babies require change of diet almost as much as grown-ups, but the rigid adherence to punctuality and hygienic methods which are so firmly stressed throughout the book will secure a large measure of success for this as for other modes of feeding.

THE "Quarterly Review of Biology" is published by the Williams and Wilkins Company, Baltimore, U.S.A., the English agents being Messrs. Baillière, Tindall and Cox, from whom this journal is obtainable at an annual subscription rate of 23*s.* 6*d.*

"OSMICS" is an occasional periodical published by Messrs. Oliver and Boyd, Tweeddale-court, Edinburgh.

*Corrigendum.*—In Dr. Moppett's laboratory note on the Lethal Effect of Ultra-violet Light in THE LANCET of May 1st (p. 907), the lethal dose for kidney epithelium was given as an exposure of 10 seconds. Ten *minutes* was the period intended.

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[1] THE LANCET, 1925, i., 880.

[1] Baby's First Year. By Nurse Hill. Oxford: Basil Blackwell. 1926. Pp. 68. 1s.

# An Address

ON

# THE PRESENT POSITION OF THE TUBERCULOSIS PROBLEM.

*Given at the University of Chicago on May 10th, 1926,*

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PERHAPS no single disease has been so fertile as tuberculosis in divergent views as to its causation and as to means for its prevention; and these differences of outlook continue notwithstanding our certain knowledge that in the absence of the tubercle bacillus there can be no tuberculosis. For it is common knowledge that minor degrees of infection need not cause actual disease, and that many unfavourable hygienic circumstances excite into activity an amount of infection, which in their absence might have remained permanently dormant. Hence there is a corresponding difference of opinion as to the principal factors which have led to the astounding result embodied in the statement that the death-rate *from respiratory tuberculosis*, which in England and Wales in 1871–75 averaged 2·22 per 1000 of population, *had become 0·84 in 1924*, a decrease of 62 per cent.

The problem is one of profound interest and practical importance, not only because differences of opinion as to the causation of this reduced mortality continue and are responsible for much lassitude in effort towards further reduction; but also because, *notwithstanding the vast improvement just indicated, tuberculosis continues to be one of the chief causes of death, and perhaps the most frequent source of adult disability, and of the production of dependent widows and children. In 1921*, in England and Wales—

| | | |
|---|---|---|
| Tuberculosis (all forms) caused | 41,103 | deaths, |
| As compared with— | 50,380 | from cancer, |
| | 37,786 | „ bronchitis, |
| | 30,910 | „ pneumonia, |
| | 60,650 | „ cardiac diseases. |

The items thus tabulated are not strictly comparable, for tuberculosis when fatal is usually the predominant disease, whereas bronchitis and pneumonia frequently are secondary to other infections or to non-infectious diseases; and cardiac diseases should be regarded as the end-product resulting from earlier infections, especially by the rheumatic virus and the *Treponema pallidum*.

Furthermore, from an economic standpoint, tuberculosis may be regarded as more important even than the 51,813 deaths which in 1921 occurred in the first year after birth. All life is valuable, and death at the beginning of life has an importance all its own, not only because of promise destroyed, but also because mortality at this age is an unfailing index of a much greater amount of "sickness not unto death," which leaves its traces in weakness and incapacity in later life.

From our present point of view the difference between cancer and tuberculosis is clearly shown in Fig. 1, from which we can ascertain whether the chief incidence of deaths has been in the most fruitful years of life, or whether these deaths have occurred chiefly after the victims have paid back the debt to society which they have incurred in their birth and their upbringing.

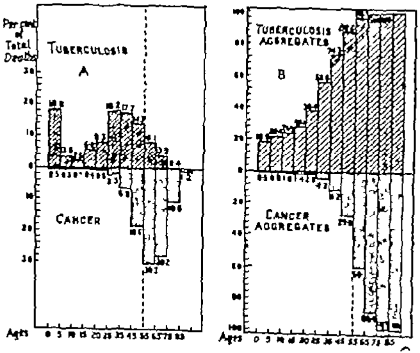
It will be seen that tubercle has killed 96·7 per cent. of its total victims before they reach the age of 65, while cancer at the same age has only secured 60 per cent. of its total victims. Both diseases, however, have supreme importance in view of the fact that more than half of the total mortality from each of them occurs at the working years of life, 20–65.

### *Age and Sex.*

The vital statistics of age and sex, and of local incidence of tuberculosis throw important light on the problems of tuberculosis already partially solved or remaining to be solved; and we may profitably spend a few minutes in considering them. Let us consider first the age and sex incidence of total tuberculosis in males, as shown in the English figures for 1912–14 and 1923 (Fig. 2). The same figure shows also the reduction of death-rate which has occurred at different ages. With the single exception of the age period 20–25 there has been a marked decline at all ages, the reduction in the peak in adult life 25–65 being very striking.

*The female curves for the two periods show similar declines at all ages except 15–25; and it would appear that at these ages, as also at ages 20–25 in men, some unfavourable influence has emerged, associated with unemployment, with the increasing migration to towns and the increase of indoor industrial occupations both for men and women.*

FIG. 1.



England and Wales, 1901–10: A. Percentage of total male deaths at all ages from tuberculosis and cancer which occur at each age-period. B. Ditto at each and all lower age-periods. Taken from the author's "Elements of Vital Statistics" by kind permission of Messrs. Allen and Unwin.

### CHILD TUBERCULOSIS.

The marked reduction of registered tuberculosis in the first five years of life calls for separate comment. Prior to 1910 the death-rate at these ages was higher than that at any subsequent period of life; but latterly this has ceased to be so, probably because with increasing accuracy of registration, deaths formerly ascribed to tabes mesenterica or to tuberculous meningitis are now only so returned in most instances as the result of more careful weighing of evidence. That there has been a real decline in tuberculosis at ages under 5 is undoubted, for these ages can scarcely have escaped the influences causing a reduced death-rate at higher ages. It would appear that some of the decline shown in the curve at ages 0–5 is actual, while some is due to changes in death certification. This, however, does not complete the story as to tuberculosis in childhood. Owing to difficulties in diagnosis it is probable that many deaths from acute general tuberculosis in childhood remain unrecognised, and that many cases, for instance, of so-called bronchitis and broncho-pneumonia, represent a rapid explosion of acute tuberculosis.

Even if we take the official figures at their face value, and assume that there has been as large a decrease in child tuberculosis as is shown in them, it is none the less true that in childhood the tubercle bacillus still claims a vast number of victims, probably more than at any later age-period of life. Hence one of the most urgent problems to be studied in public health administration, and in the work of every practitioner in medicine, is *how to minimise risks of infection during the first five and especially during the first two years of life.* The removal of risk from infected milk or its great reduction only covers a fraction of the danger; for exact observation has shown that only a minority of cases of non-pulmonary tuberculosis, the chief form of tuberculosis in children, are of bovine origin. The continuance and extension of precautions in respect of milk is most important; but this alone leaves the major problem of prevention of infection, that from human sources, unsolved.

The study of the epidemiology of tuberculosis, as elucidated by Dr. G. E. Bushnell, by Metchnikoff, Calmette, and others appears to point to the conclusion that each infant at birth may be, and probably is, in a similar position in respect of tuberculosis to that of remote races when first exposed to this disease. Both in children and in the adults of hitherto non-tuberculous communities when invaded by tuberculosis there is a very high mortality and the tuberculosis is of an acute and rapid type. Even in urbanised communities like England the high peak of mortality in the first five years of life, a peak which is probably now understated (Fig. 2), may be regarded as good evidence of the initial lack of immunity of young children. Those children who receive smaller doses of infection become "naturally vaccinated" (Metchnikoff), or it is conceivable that in some instances larger doses are resisted by children with higher resistance. Thus after infancy the survivors in thickly populated countries secure a partial immunisation against tuberculosis in later life. It has been suggested that this partial immunisation may be produced by tuberculous cows' milk derived from a mixed herd; but there is no evidence of this so far as respiratory tuberculosis is concerned; and as regards non-pulmonary tuberculosis, which is commonly not fatal, its strikingly reduced frequency is more satisfactorily explicable by the fairly general substitution of pasteurised for uncooked milk and by the reduction in human sources of infection.

### RACIAL SUSCEPTIBILITY AND CHILD INFECTION.

The facts as to child tuberculosis do not necessitate the assumption that there exist real racial differences in liability to fatal tuberculosis. The experience of the Irish and Negroes at one end of the scale and of Jews at the other, is commonly adduced as indicating real racial differences. It is difficult, however, to separate the essential influence of heredity in race from collateral differences of social life, of personal habits, of cleanliness, and of varying degrees of exposure to infection; and it is preferable therefore to suspend judgment under this heading.

There remains, as already indicated, the question as to why certain children survive and others perish after infection by tuberculosis. The two results are seen in the same mixed community and in the same family; and although it may be that in the same family, for instance, differences of susceptibility occur, the difference is most naturally explained by assuming that what follows—whether partial immunisation or death—depends primarily on the number of occasions on which infection has been received and on the aggregate dosage of this infection. The somewhat comparable case of diphtheria comes to mind. The infant at its birth appears to possess some partial immunity, probably derived from the maternal circulation. This disappears, but later, as shown by the Schick test, the child develops its own immunity, as the result of minimal doses of casual infection, unless before this happens it is infected by an overwhelming dose of infective matter.

But the case of diphtheria suggests another possibility—*viz.*, that immunity is acquired by infection from a less virulent type of diphtheria bacillus and is not merely consequent on a reduction in the number of invading bacilli; and may not this also occur in tuberculosis? There is no direct evidence as to this, but whether it be so or not, if Calmette's current experimental work is confirmed, there may be opened out great possibilities of protection of children in consumptive families in this direction. Meantime it is a counsel of practical wisdom to assume that minimum dosage of virulent bacilli occurs in instances of safe recovery from tuberculous infection; and on this assumption public health administration must regard itself as anxiously concerned to adopt measures which will minimise during childhood exposure to infection from tuberculous patients. This emphasises the importance of continuous and detailed care in respect of housing for tuberculous adults, including the inculcation of careful precautions as to coughing and fondling, as to cleanliness of hands and handkerchiefs, and the provision of separate bedroom accommodation, either at home or in a sanatorium or hospital. Even if cases of open tuberculosis cannot be continuously segregated—whether functionally at their homes, by the taking of rigid precautions and by separate bedrooms, or geographically in institutions—this can be done intermittently, and there is every reason for believing that discontinuity of infection greatly reduces risk of effective infection of the exposed. The alternative plan of removing children to summer or seaside homes is sometimes practicable, and this has a range of utility which has been more fully appreciated in France than in England.

The special need to protect children during the first few years of life will remind public health workers of the similar need for preventing children of the same age from acquiring measles, as it is then many times more fatal than later in life. Both child hygiene workers and tuberculosis workers should increasingly act in the closest combination if infants are to be safeguarded against tuberculous infection, from which they have not yet had time to acquire partial immunity by gradual and small-dosed infection; and here is, in my view, one of the most promising and fruitful lines of public health work. According to a statement of Landouzy some years ago, 27 per cent. of the total deaths from all causes in the first two years of life are due to tuberculosis. The English official records give this proportion as only 3·3 per cent. The truth lies somewhere between these two extremes; but even the lower figure means that mischief is so great as to call for more strenuous efforts for the protection of young children. It is significant that a large part of this danger occurs in the "crawling" stage of childhood, and the need for avoiding infection of toys and fingers at this stage is very great.

### RESPIRATORY TUBERCULOSIS.

After childhood respiratory tuberculosis is the chief form of fatal tuberculosis; and we next consider the age-incidence of respiratory tuberculosis (Fig. 3). It will be noted that for England and Wales as a whole (Fig. 3, A) in 1923 the death-rate from phthisis in females reached its maximum at the age-period 15–25, being only slightly lower at the age-period 25–35, while for males the highest death-rates were at ages 35–55. It will be noted, furthermore, that at the age-period 15–25 the female death-rate was higher than that for males. At all later ages the male is higher than the female rate; and it is evident that men are exposed to infection, or to inimical influences which bring infection into dangerous activity, to a much greater extent than are women. Some light on this point is thrown by contrasting the curve for males in rural districts (Fig. 3, B) with that for females in England as a whole. These two tend to approximate, but even in rural districts the death-rate of men aged 25–35 is much higher than that of women generally. How far migration to and from towns affects these results can only be guessed.

The difference between males in rural districts and in the larger towns is striking (Fig. 3, B). Living and working in our great towns, with the added dissipations of town life, imply a heavy additional phthisis rate, though happily the difference between urban and rural death-rates, as decade follows decade, is declining

Perhaps the most striking curves are shown in Fig 3, c There is a remarkably small difference between the urban and rural death rates for women; and it would certainly appear that tuberculosis need be no more serious a disease in town than in country This is explicable in several ways. It may be regarded as additional evidence that the sources of danger in urban life are industrial and convivial—e.g , in public houses, from both of which dangers women commonly escape. An additional factor may be that consumptive men in towns can obtain institutional treatment at an earlier date and longer in duration than is obtainable in rural districts, and their families receive less massive infection than rural families This last difference, if it exists, will gradually disappear; and the increasing proximity of the rural to the urban death rate from phthisis points in the same direction

FIG 3

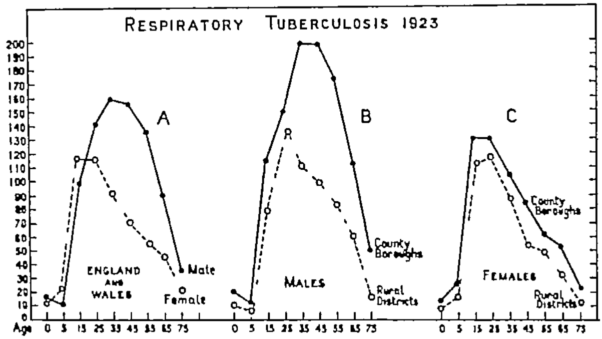
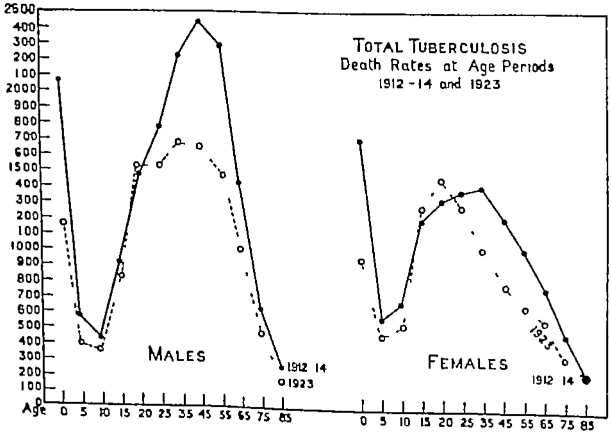


FIG 2



In different countries, in various parts of the same country, and at different periods, Dr J Brownlee has shown that the age-incidence of maximum death rate from phthisis may occur in early adult life, say 20–25 years, in middle age from 45–55, or in persons over 55, and has suggested that these variations may imply that phthisis is a group of three diseases But the fact that in different parts of the same country and in the two sexes each of these types of age-incidence may be seen at the same time does not support this hypothesis, and it is more in accord with our general knowledge of the disease to maintain that the differences in age-incidence of phthisis at different periods and in different communities are due to the varying extent to which the causes of tuberculosis are at work. The disease tuberculosis is the product of two sets of circumstances—an adequate dosage of infection, and conditions favouring or impeding successful invasion of the disease; and as both dosage of infection and circumstances favouring its development vary greatly in different communities and social strata, it is reasonable to anticipate differences in age and sex distribution of the disease, the hypothesis of three types of disease being unnecessary.

We may next examine the historical course of the death rate from all forms of tuberculosis. This is shown for England and Wales in Fig 4, reproduced from a chart prepared for the New York Tuberculosis Association Two things stand out in this diagram, first, the steady and continuous course of decline, which is unmistakable since the early 'seventies; and secondly, the fact that as the amount of pulmonary tuberculosis declines, so still more does that of non-pulmonary tuberculosis.

### RATE OF DECLINE.

The curves for New York City and for the registration area of the United States, derived from the same source, bring out the facts that (1) although the death-rates are higher than those in England, they show since 1000 a similar decline, with a much smaller interruption in 1018; and (2) they further illustrate the point already made earlier in this address that the city death-rate is rapidly approximating that of the registration area of the United States as a whole, the population of half of which is still in rural districts. Similar curves dealing with respiratory tuberculosis in England and Wales bring out the steady decline in the phthisis death rate from 1870 onwards Evidently for a long series of years, in the complexity of modern social and economic conditions in England, factors have been at work which on balance have led to a steady rate of decline of the tuberculosis death-rate; and there is no confirmation of the title or the substance of Prof. Pearson's contribution to *Biometrika* (1018-10, vol xii ) on "The Check to the Fall in the Phthisis Death-rate since the Discovery of the Tubercle Bacillus and the Adoption of Modern Treatment" There had been no check in the rate of decline prior to the Great War.

*It is true that in 1924 the national death-rate* from phthisis was almost the same as in 1923, but it was lower than in any preceding year; and we must have the experience of several more years before we can begin to think that the English death-rate is incapable of sinking as low as, or lower than, the present New Zealand death-rate shown in Fig. 5.

### CAUSES OF DECLINE.

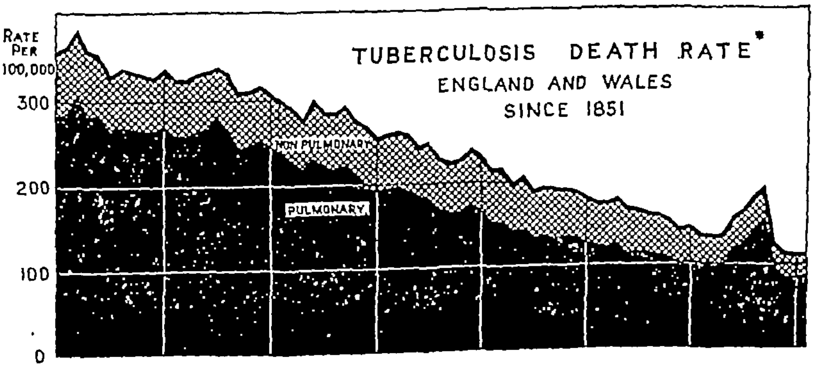
I have referred to the influences causing decline of tuberculosis in England and in other countries. What have these been? What, for instance, has been occurring to cause the improvement shown in several countries, though to a varying extent, in Fig. 5, also derived from the Research Service of the New York Tuberculosis Association?

### MEASURES DIMINISHING INFECTION.

I limit the inquiry to the human which is the major source of tuberculosis in man. Two changes must, in my judgment, be placed first in order of importance: (1) There has been a great improvement in the cleanliness of the population, domestically and industrially, especially in regard to coughing and expectoration. The magnitude of this improvement it would be difficult to exaggerate. It amounts to a revolution in personal habits, the exceptions to this statement being few as compared with the experience of a few decades ago. (2) Along with this has proceeded a great improvement in the treatment of disease generally, and of tuberculosis, both at home and in hospitals. Carefully closed and warm bedrooms occupied in common by sick and well have been replaced largely by separate and well aerated bedrooms for the sick; and a steadily increasing proportion of the sick are treated in hospitals.

In 1869–70 the death-rate from respiratory tuberculosis in England and Wales was 244 per 100,000 of population. At that time 8·3 per cent. of the total deaths from all causes occurred in public institutions. In 1919–20 the phthisis death-rate was only 92 and the proportion of institutional deaths was 24·3 per cent. Taking the whole of England and Wales it is noteworthy that over a third of male deaths and more than a quarter of female deaths from phthisis now occur in hospitals, commonly after prolonged and often repeated stay of the patients in these institutions. For London about half the total deaths from phthisis occur in institutions; and the proportion in large American cities is quite as high.

FIG. 4.



The present universally accepted policy for cases of open tuberculosis is to urge that every possible precaution against infection shall be taken, and that whenever practicable institutional treatment shall be secured, at the least during acute exacerbations of disease. It is not unreasonable, to put the matter at its lowest, that the same practice which is now universally regarded as important in the interest of the community, should have borne a large share in bringing about the historical reduction of phthisis mortality which has been experienced. And we know that this practice has been increasingly in operation. As factors opposing reduction of phthisis have increased—more dense aggregation of populations, replacement of outdoor by indoor occupations, and the reduction of house room which always goes with town life—so has the hospitalisation of consumptives increased; and hospitals from this point of view must be regarded as an important, indeed an essential, extension of housing accommodation in modern circumstances of life. The more important factors for and against reduction may be thus summarised:—

*Factors Making for Reduction.*—(1) Gradual substitution of small-dosed and infrequent in lieu of large-dosed and frequent infection, and especially (*a*) increased cleanliness in personal habits (spitting, &c.), (*b*) reduction of dust and of infection in industrial life, (*c*) better care and segregation of the sick. (2) Increased resistance by improvement of general hygienic conditions, including improved nutrition, and diminution of industrial dust. (3) Provision of means for prompt diagnosis and continued treatment of tuberculosis, dispensaries, residential institutions, open-air schools, &c.

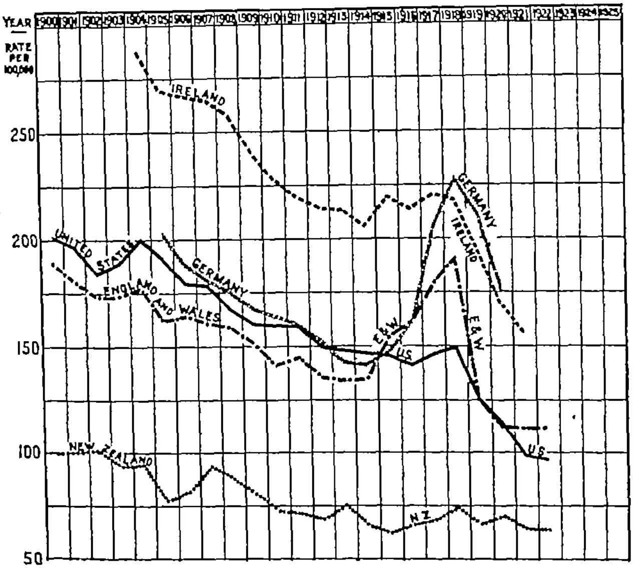
*Factors Opposing Reduction.*—(1) Steady increase of town life. (2) Increasing replacement of outdoor by indoor occupations. (3) The reduction in house-room which goes with town life.

The experience of Norway which I have discussed elsewhere need not be further emphasised here. It offers a crucial instance of the effect of segregation in reducing almost to the point of extinction a chronic infective disease like leprosy, which, although much less actively communicable, has many points of resemblance to tuberculosis. From other European countries leprosy had already disappeared; but in Norway it lingered until a steady system of segregation of cases was practised. Sir Leonard Rogers has shown a similar course of events in some other countries in which segregation of known cases has been introduced.

### INFLUENCE OF NUTRITION.

It will be remarked that improved nutrition appears also in the preceding tabular statement as an important factor in reducing mortality from tuberculosis. There is some ambiguity in the use of this phrase, just as there is in the diagnosis of malnutrition in a large proportion of the children attending school. In the latter case, unless a further analysis is pursued, the implication is that what is needed is more milk and other foods. Commonly this is the need; but the malnutrition may be caused also by some disorder or disease requiring treatment, by deficient sleep, by general defects of hygiene, or some other cause; and a "nutrition clinic," in the sense of a scientific, including a social, diagnosis of the special case is called for before we decide that the supply of additional food is the only or even the main necessity. So also when it is assumed that better and more abundant food is largely responsible for the lowered mortality from tuberculosis, one cannot be satisfied with this imperfect analysis of circumstances. Improvement in cheapness and abundance of food and in purchasing power has been associated historically sometimes with large and sometimes with insignificant reductions in the death-rate from tuberculosis; and even in the treatment of tuberculosis, over-feeding, in the sense of high calories and especially of a large meat diet, plays a much smaller rôle in the attempt to increase resistance to the intruded infection than, in the minds of physicians, it has done in the past. This is true for nutrition as stated in terms of calories. Whether it is so for special articles of diet is not so certain. In view of our rapidly increasing knowledge of the specific value of auxiliary foods and allied substances in the prevention and treatment of scurvy, rickets, goitre, and beri-beri, it is conceivable that some deficiency in the dietary of the Irish may play a larger part in the excessive death-rate from phthisis shown in Fig. 5 than an appeal to special racial proclivity, in which we are too ready to find refuge. It is still more likely that better treatment of tuberculous patients, improved housing, and a growing appreciation of the need for cleanly habits have borne a chief part in the reduction of the Irish phthisis rate shown in recent years.

FIG. 5.



Death rates from pulmonary tuberculosis, 1900–23, in various countries.

### OTHER FACTORS IN THE WAR.

And it may be that the lack of certain special elements of food—especially fats—played a considerable part in causing the increase in the death-rate from tuberculosis shown in Fig. 5 in the English and German curves during the war. Defective nutrition, whether of some specific character or more generally, doubtless played a part in bringing about what earlier in this address I have called effective infection. But other factors were at work, and it is difficult to ascribe to each of them their true weight. In England nearly all workers suffered during the war from overwork, itself a factor facilitating and liberating infective material. There was an enormous increase in the industrial employment of women, who were commonly aggregated in special centres in circumstances of overcrowding. Then in 1918–19 there occurred the terrible invasion of influenza, which, as shown in the English experience of influenza in 1889–90, means an excessive and hastened mortality among tuberculous patients. The coincidence of the two events in the more recent experience is shown below.

*Death-rates per Million Living among Females.*

| | | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|---|---|---|---|---|
| From influenza | Fem | 272 | 232 | 183 | *2944* | 1101 | 355 | 226 | 559 |
| „ respiratory tuberculosis | Fem. | 915 | 920 | 975 | *1070* | 656 | 757 | 777 | 766 |
| | Male | 1410 | 1447 | 1625 | *1615* | 1173 | 1003 | 1002 | 1024 |

The influenza epidemic undoubtedly bore a share in increasing the phthisis death-rate in 1917–19. So also did the circumstances of overcrowding and overwork of war time. The great improvement in infantile mortality during the war, the vast decrease in alcoholism and its consequences, and the release of an unusual proportion of greatly increased earnings for food, makes it unlikely that English civilians suffered severely from malnutrition, except as regards butter and other fats, which may be regarded as having special importance

*Heredity.*—In the preceding rapid sketch I cannot pretend to have more than indicated some of the problems associated with the incidence of tuberculosis. Nor have I enumerated all these problems. There are still some among us who attach importance to heredity as an important predisposing influence in the causation of tuberculosis. With advance of knowledge this view becomes increasingly nebulous; and most of us probably are convinced with Robert Koch (quoted by Dr. William H. Welch) that "predisposition is merely proximity to the bacillus." The terrible toll—probably much understated in the official figures—taken by tuberculosis on child life does not support the view, that in increasing proportions the survivors in successive generations have gradually become more resistant to tuberculosis than in the past. The truth rather lies in the statement that infants in every community and adults who have lived remote from urban conditions, especially in primitive life, are both alike in not having run the gauntlet of repeated small doses of infection, and are therefore prone to suffer from acute general tuberculosis.

*Cyclical Factors.*—Nor can we be said to possess satisfactory evidence of cyclical factors in the epidemiology of tuberculosis, to which importance is sometimes attached. It is futile to base such an hypothesis on the proportion of deaths from phthisis to total deaths from all causes, unless it is proved that the variability of one quantity of the total deaths can be eliminated from the proportion. Even were such cyclical changes to be demonstrated, and tuberculosis were thus placed in the same category as, for instance, influenza, cerebro-spinal fever, diphtheria, and scarlet fever, the classification would add but little to our knowledge. To rest in such a classification is to invite mental and moral sterility. We need to remind ourselves that but a few years or decades have passed since malaria, yellow fever, plague, enteric fever, and cholera were quite legitimately—and even now can be—placed among diseases influenced by imperfectly known cyclical conditions. But they have all been brought within the range of active preventive measures, and no one is disturbed by the consideration that if our present preventive measures succeed in eliminating any or all of these diseases a non-immune population will result from our efforts. In England enteric fever is losing its annual seasonal autumn rise, it has almost ceased to increase greatly in prevalence in warm and dry years; and we look forward to the rapidly approaching time when it will have become as nearly extinct as typhus fever. And we may content ourselves with the reflection that although for many generations to come it is unlikely that the majority of the people in civilised countries will cease to be invaded by diminishing doses of tubercle bacilli, there is no reason why, given the universal application of knowledge already in our possession, the reduction of the present death-rate from tuberculosis should not continue, thus removing from our midst one of the chief causes of poverty and social misery.

## FUTURE ACTION.

After this necessarily incomplete review of some of the factors concerned in the prevention of tuberculosis, we may in conclusion name some practical considerations arising from it. Our chief aim must be to minimise infection, especially at the most susceptible ages, and to promote all efforts of child welfare work and every branch of public health work which, whether by controlling epidemic diseases, by improving housing, or by securing improved occupational circumstances, will diminish the risk of arousing latent infection into activity or of renewing and increasing infection. In short, tuberculosis work is a branch of public health work and must be carried on as such, though, of course, not necessarily by the same workers.

Our working of tuberculosis medical organisations, dispensaries, sanatoriums, hospitals, &c., has emphasised the need to link them up with general medicine. This has been evidenced in the detailed work of sanatoriums and hospitals, where physicians and surgeons other than those having special skill in tuberculosis are occasionally required, and particularly in tuberculosis dispensaries, where coöperation between physicians in private and public practice is especially desirable. The ideal towards which the tuberculosis dispensary should approach is that of becoming one division of a medical or health centre for each unit of population, intended for medical consultations in different departments of medicine, and where consultations can take place not only between general practitioners and the staff of the centre, but also between the staff of different parts of the centre. Pending the development of such a general system of consultation services, the present official medical arrangements for the control of tuberculosis need more general support and extension. I need scarcely emphasise in this address the value of free expert medical examination in doubtful cases of tuberculosis, the need for additional hospitals for consumptives, the need for better use of sanatoriums, for the introduction of occupational therapy, and for special workshops for the sick, the need for the employment of many additional visiting nurses, for open-air schools, and for extended care and after-care of tuberculous patients.

Even in the most completely organised city or town it is doubtful whether anywhere the problem of tuberculosis can be said to have been tackled on a scale equal to the needs of the case. There has been too often an impression that when the reporting of cases of tuberculosis has been made obligatory, when laboratory facilities have been provided for examination of sputum, when occasional means for securing an expert medical examination of the invaded family are available, when a public health nurse having a preposterously large visiting-list is provided, when here and there a consumptive is treated for many months in a sanatorium, enough has been done to justify us in being surprised at the absence of startling statistical results. We need to think of the work needed in terms which are commensurate with the magnitude of the problem.

I suggest the following elementary questions as needing to be asked respecting any local arrangements for the control of tuberculosis:—

How do the number of cases of tuberculosis reported compare with the number of deaths from this disease?

How soon after commencing attendance does the practitioner notify his cases?

In what number of doubtful cases is consultation arranged between the practitioner and the tuberculosis officer?

In how many of the cases notified has a medical examination of the rest of the family been secured?

In how many of the cases notified has sanatorium or hospital treatment been provided?

Does the number of hospital and sanatorium beds for tuberculous patients equal the annual number of deaths from tuberculosis?

During institutional treatment has it been an essential part of the arrangements to instruct and train the patient in the hygiene of his future life?

While the patient is away from home have his domestic conditions been investigated, the condition of health of his family ascertained, and such assistance given as is needed to maintain nutrition, or directly or arranged from collateral sources?

After each patient has left the institution, has he been the subject of continued sympathetic visitation and of help to ensure that he has (*a*) occupation adapted to his physical ability, (*b*) a separate bedroom, (*c*) such supplementation of income, when needed, as will secure him from malnutrition.

I might enlarge the list of questions; but the above suffice to show that as work becomes more valuable, more and more work is needed. This is true of good work in every department of life. Efforts to combat evil reveal further avenues for such work. This work is well within the financial ability of every community, and it is equally certain that if undertaken it will repay manifold in the improved health and efficiency of the community. Let me sum up some of the practical points which need to be emphasised.

1. The objects of all antituberculosis measures are to increase the resistance of mankind to infection, and to reduce the amount and frequency of infection to which mankind is exposed.

2. The amount and frequency of infection are greater in consumptive families; and commonly, owing to poverty and its associated circumstances, the resistance to infection is at its lowest in such families.

3. The age-incidence of mortality from tuberculosis shows that the risk of acute tuberculosis and death is greatest in the first two or three years after birth. Hence the supreme importance of protecting young children against infection.

4. The excessive incidence of tuberculosis in early childhood and the important part played by epidemic diseases in increasing tuberculosis emphasise the extreme importance of connecting tuberculosis work and child welfare work closely together and of affiliating both to general public health work.

5. Steady educational work is required until the public realise that our present antituberculosis work is sound and beneficent, and that it needs to be extended in every direction. Until we are in a position to say that in every area every tuberculous patient is receiving throughout the whole of his sick-life such care as will give him the best chance of recovery, and which, whether recovery is possible or not, will secure comfort for him, and protection against infection of all who are associated with him we cannot be satisfied. When this can be said, the present rate of decline in the death-rate from tuberculosis will become more rapid, and one of the chief causes of present suffering and distress and the burden of dependent widows and children which follows later will be very greatly decreased.

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THE Commander-in-Chief recently performed the opening ceremony of the Connaught Military Hospital at Poona. The hospital occupies the site of the old Station Hospital, which has been much enlarged and equipped with all the latest improvements.

# ADVANCE IN MEDICINE.

## WITH REFERENCE TO THE CAMPAIGN AGAINST TUBERCULOSIS.

*An Address delivered before the North-Western Tuberculosis Society at the University of Liverpool on March 18th, 1926,*

By J. G. ADAMI, C.B.E., M.D. Camb., F.R.S.,
VICE-CHANCELLOR OF THE UNIVERSITY OF LIVERPOOL.

It is as a pathologist, I take it, that I am asked to address you, and thus you will forgive me if I speak as a pathologist at large, whereby I mean not according to the more limited and Teutonic meaning of the term as a morbid anatomist pure and simple, but as a student of disease, its causes, course, and results. And as tuberculosis is an infectious disease it follows that, dealing with it, I clearly include bacteriology as part of pathology, nay more, that what I shall have to say must of necessity deal largely with bacteriological data and bacteriological considerations.

I do this the more willingly, since this occasion gives me the opportunity to take up the cudgels on behalf of the pathologist and of pathological advance. In the annual report of the Medical Research Council for 1923–24, published a year ago, its distinguished secretary passed a grave reflection upon pathology in general and British pathology in particular, pointing out that while physiology has of late been progressing by leaps and bounds, pathology, including bacteriology, has been largely at a standstill, particularly in this country, and regarding the pathologists and bacteriologists of to-day as mere laboratory routinists, slaves of the hospitals on the one hand, of the municipal authorities on the other, whose lives are not given over to research but to the provision of diagnoses.

Now, there is a sufficient substratum of truth in these accusations to make them sting. It is quite true that pathology originated in the hospital deadhouse, that the earliest pathologists, from Morgagni up until the middle of last century, and in this country up to 1880 or so, were exclusively practising physicians and surgeons, men of the type of Hunter, Addison, Bright, and Paget, and it is as an outcome of this old tradition that pathology remains closely associated with the hospital, with all the great advantages and certain great disadvantages that accrue from this association.

Physiology, the study of the functions of the body in health, had no such essential association, and in fact, its great weakness until the early years of this century lay in its attempt to regard itself as a pure science, separated from medicine. And if Sir Walter Fletcher, himself a physiologist, exults, and exults with justice, over the extraordinarily good work accomplished by the physiologists of to-day in advancing the science of medicine, it is proper that he should keep in mind that that work demonstrates its practical value precisely as it becomes pathological—i.e., as it becomes applied to the study, not of the healthy body, but of disease. He forgets that each and every experiment devised, be it in a physiological or in a pathological laboratory, upon the elucidation of any one function of the body, is a physiological experiment so far as it throws light upon the normal functioning of the body, is pathological so far as it illuminates that excessive or defective function which constitutes disease: for all disease is the outcome of either excessive or defective function. Increasingly during these post-war years the physiologists have trespassed into pathological territory; until now, for example, Sir Walter Fletcher claims this territory as their own, and evidently has reached the point of doubting whether pathology has any *raison d'être*—whether, in fact, it is a science at all. He and his friends go so far as to hold that the basis of all pathology, the study of inflammation, and of the reaction to injury, is essentially a physiological problem because, forsooth, these reactions are the normal properties of the individual and his tissues, and I suppose they would add that injury is the normal healthy condition of affairs.

What, then, is the truth? A science is not a study associated with some particular form of technique needing particular equipment. Were that so, then assuredly neither physiology nor astronomy, nor, indeed, pathology, are sciences. Just as astronomy is the study of the celestial bodies and comprises everything that has to do with them, their light, their movement, their attraction one to another, their dimensions and composition, so is pathology the study of all that we regard as disease, as distinguished from ease, and there, as a science, it has its limits. And to object that little advance is being accomplished by British pathologists and bacteriologists of to-day is, in the first place, not to estimate justly the work now being undertaken in the university and hospital laboratories of the country, and in the second not to grasp the principles underlying advance in any one science.

The interesting point is that 30 years ago identically the same complaint was being made over the English-speaking world regarding the physiologists—they were not advancing, they were concerning themselves over abstruse problems that had no possible practical application. I remember hearing one rude and outspoken member of a university staff remark that all the elaborate investigations of Burdon Sanderson, Gotch, and others upon the isolated muscle-nerve preparation might with equal edification be performed upon a piece of chewed string. And in medical schools the physiologists were credited with being "remote, unfriended, solitary, slow."

Of course, these criticisms were as unfair as they were rude. These apparently barren years, we now see, were very far from barren. The painfully intense work then accomplished was leading up among other things to the electrocardiograph and a complete revolution in our understanding and treatment of cardiac disease, to a like revolution in our understanding of respiration, to our present methods of diagnosis and treatment of digestive disturbances, to our huge advances in a knowledge of metabolism, and, with this, to the development of physiological chemistry and biochemistry as distinct departments, and, in short, to the happier conditions of to-day when physiology and medicine have realised their dependence one upon the other.

### The Causation of Infectious Disease.

I am, you will recall, addressing you on the subject of "Advance," and I trust you will forgive me if I build up a little slowly, but all the more surely, my main, or shall I say ultimate, thesis of advance in tuberculosis. Let me, as leading up thereto, take up next the broad subject of the causation of infectious disease in general. What is the story? Is it not that of long centuries in which brilliant hypotheses as to the existence of living but invisible germs of disease from time to time held a temporary sway, until at length in the second quarter of the nineteenth century, with the development of the microscope, certain of the grosser micro-organisms were found constantly associated with particular conditions: Goodsir, for example, in 1826, finding sarcinæ associated with a group of cases of gastric inertia and dilatation, and following this, Schoenlein in the 'thirties finding his achorion associated with favus, Pollender in the 'forties and Davaine in the 'fifties discovering a similar constant association between anthrax and the relatively large bacillus of that disease. Then, following the botanical studies and descriptions of the bacteria by Ferdinand Cohn, we come to the real foundation of morbid bacteriology by Past
and Koch in the late 'sixties and early 'sevent
And with that, within the next 20 years, the
vellous development of the new science—followi
upon the demonstration of an easy and practica
method of obtaining pure cultures and of st
and detecting bacteria—and the laying down of Ko
postulates. What a marvellous time it was, with t
rapid discovery one after the other of the causati

organisms of a veritable host of diseases of men and animals! And then swiftly following upon the heels of these discoveries, the development of our knowledge of immunity, of ectotoxins and endotoxins, of vaccines and immune sera. As medical men we were transported into a new world. As regards the infectious diseases, the text-books of medicine written prior to 1880 became of little more than antiquarian interest. And then from 1895 to 1905 the tide of advance slowed down. The last really great discovery was that of Schaudinn of the *Spirochæta pallida* in 1904 which, incidentally, is of course not a bacillus. It is true that there was a separate and later burst of advance in connexion more especially with tropical diseases and the recognition of increasing numbers and species of pathogenic protozoa. But admitting this, how very little apparent advance, or shall I say how very little sensational advance, there has been either in bacteriology or immunology in the last 20 years, say from 1905 to 1925!

This does not mean that during these 20 years there has been any reduction in the number of eager workers and investigators. On the contrary, the number has vastly increased. Think also how vast has been the improvement, both in the number of laboratories and in bacteriological technique during the same period. Think also of the improvement in the standard of laboratory work demanded of the students. It is not, I feel confident, that there were giants between the 'seventies and 'nineties who to-day are non-existent. Nothing of the sort. It is merely that here we have yet another instance of the nature of man's progress, another instance supporting my old friend the late Prof. Bateson's contention that evolution is not by imperceptible, gradual and minute advances, but is by sudden leaps and bounds, followed by long periods with little or no obvious change. It is akin to what time and again we notice in other human activities. Within 20 or 30 years of the introduction of Norman architecture we find built the most superb examples of that style, and for a hundred years or so there is no sensible advance; then Pointed architecture comes in, and again in less than a generation the style is perfected, and so with the Decorated and the Perpendicular styles. Within a generation of the invention of the printing press were produced absolutely the finest examples of printing as regards artistry and clearness of type, perfection of paper, and appearance of the printed page, and that not in one place but in many. Since then we may have developed the mechanical devices of the printing press, the linotype and other methods of composing the page; we may turn out in five minutes more 24-page newspapers than the old time printer could have printed in the year; but for quality and beauty of bookwork the climax was reached close upon 500 years ago, in less than a generation. We celebrated last year the centenary of the railway locomotive—we are to celebrate shortly the centenary of the opening of the Liverpool and Manchester line. By 1840 railway engines were being produced as speedy as any to-day, or as speedy within very few miles per hour. We have improved the haulage power, and have increased efficiency and fuel economy, but to all intents and purposes, by the activities of a vast number of keen engineers testing out this and that, the steam engine was largely perfected within 15 years of the opening of the first railway. After that advance slowed down so as to appear to the onlooker almost to cease, though engineers will tell you of constant attempts at further improvement. The same story seems to be that of the present generation in regard to gas and oil motors, and to be in the process of fulfilment as regards aeroplanes. Underlving and inducing each burst of advance is clearly the discovery of some new technical device of easy general application; in architecture, I take it, the formula for the construction of semicircular, pointed and ogival or two-centred arches respectively: in printing the use of movable type; in mechanical locomotion the invention of a not too cumbrous steam engine; in the motor-car and aeroplane the invention of yet lighter engines, driven not by steam but by the explosion of gases; in bacteriology, in the first stage, the improvement of the microscope, in the second effective stage Koch's application of the botanical method of gaining pure cultures upon solid media, and Ehrlich's utilisation of aniline dyes to stain bacteria. Or, put otherwise, for human advance it is not so much the act of invention or discovery that counts as it is the demonstration of methods of utilisation of the invention or discovery, which are so simple and straightforward that all interested can apply them and confirm their value, and doing this can, by the method of multiple trying out and modification, bring them rapidly to relative perfection. Though always the greatest man of science, the genius of the first water, is he who combines the discovery of a principle with development of a simple means of confirming and applying the principle.

### KOCH AND THE BACILLUS TUBERCULOSIS.

Now what is true of the general is true also of the particular. The discovery by Robert Koch of the *Bacillus tuberculosis* and of the means of growing it in pure culture, followed as it was rapidly by the elaboration of means of easy diagnosis, of which the use of fuchsin and the Ziehl-Neelsen stain deserve especial mention, placed our knowledge of the disease upon a wholly different footing. It made it possible for a man like Trudeau, isolated in the wilds of the Adirondacks, with some knowledge of the microscope but no previous training in bacteriology, within a few months not merely to recognise the bacillus but to obtain pure growths, and with these to convey the disease to animals of the laboratory. It gave the death-blow to the prevalent doctrine of diathesis. It showed us that consumption, tabes mesenterica, lupus, white swelling of the knee, spina ventosa, and many other conditions, including pearl disease of the lungs of cattle, were different manifestations of one common disease affecting different tissues and different species. It increased vastly the boundaries of our knowledge and above all it provided us with a sure means of diagnosis. Koch himself, in the years that preceded the publication of his great paper in the *Mittheilungen* of the Kaiserliches Gesundheitsamt, with vast industry demonstrated most of these facts, to have them rapidly confirmed in all parts of the world. It was a marvellous advance in our understanding of one of the great plagues of social life, and for this great investigation and discovery alone Koch must stand out as one of the greatest masters of medicine throughout the ages.

Undoubtedly to Koch and his discovery we owe the campaign against tuberculosis and its spread throughout the civilised world, the abundant provision of hospitals, sanatoria, dispensaries, and district nurses, and all the many means now employed both for the prevention and the cure of the disease, up to the latest provision of artificial sunlight and ultra-violet ray treatment. Yet how very slightly—save in the matter of diagnosis—this bears a direct association to Koch's discovery, how very little the methods we now employ both for prevention and cure have to deal with bacterio-therapy, how largely they are extensions and expansions of methods in vogue long years before Koch's discovery. Bodington introduced the open-air treatment a generation and more before the 'eighties. The treatment of pulmonary consumption by pneumothorax and lung collapse was first attempted here in Liverpool by Dr. James Carson in 1822. Just as in this country in the middle ages leprosy was stamped out without any scientific knowledge of the laws of infection, by segregating those afflicted with the disease in leper hospitals, so, as I heard Koch himself acknowledge at the London International Tuberculosis Congress in 1902 (was it not?) the reduction in tuberculosis mortality, in which this country led the world, dates from the Poor-law legislation of 1834, the establishment of workhouse infirmaries and the segregation of bed-ridden consumptives in the same. Without knowing what they were accomplishing, the Poor-law authorities in this way weeded out from the crowded houses of the poor the open infective cases of tuberculosis, thereby materially decreasing the opportunities for massive infection with the human strain and steadily reducing its ravages. The remarkable fact, as pointed out recently, is that from the 'fifties onward the reduction in tuberculosis mortality in this country pursues a relatively straight descending line, with no abrupt fall or increasing descent following upon Koch's discovery in the 'eighties.

### *Disappointed Hopes.*

In other words, great as was the advance in diagnosis brought about by Koch's discovery, it was not followed by a corresponding advance in treatment directly dependent upon it. Those of us who, like myself, date their entrance into medicine from the spacious days of the 'eighties, will remember full well what hope we then had, not to say what confidence filled us. Pasteur was producing his vaccines, Behring and Roux their antitoxins and sera. Once the bacillus of tuberculosis was found, it seemed sure that very soon we should possess either a means of vaccinating against the disease or, still better, some bacterio-therapeutical means of arrest and cure. Forty years and more have elapsed, and despite immense and unremitting efforts in laboratories scattered all over the world only now are we beginning to see light and entering upon the next great period of advance. For this I feel confidently to be the case. And this delay, let me once again emphasise, has not been from any lack of application or lack of genius, but purely from the difficulties of the problem. Koch himself, you remember, tried and failed—failed ignominiously. What hopes were raised when, in 1880, he announced his tuberculin; and with what tragic rapidity they evaporated into thin air.

It may be well to recall here the various lines of attack that have been tried and found wanting. Pasteur and his co workers had shown that in general the most powerful and long continued immunity was conferred by the natural disease—i.e., by the activity of pathogenic organisms of normal virulence under such favourable and fortuitous conditions that death did not ensue. Immunity, but apparently of lessened duration and effectiveness, could be gained by attenuating or lowering the virulence of the germ or vaccination proper, and, lastly, by inoculating either the dead bacilli or their products, the soluble poisons produced in the medium of growth outside the body either as active excretions—ectotoxins—or as disintegration products liberated on the death of the bacilli—endotoxins. Very soon it was discovered that there was an extraordinary variation in the mode of reaction of the organism to the different pathogenic microbes and the grade of immunity induced. The tubercle bacillus was evidently totally different from, for example, the diphtheria and tetanus bacilli on the one hand, the typhoid and cholera bacilli on the other. Inoculation either of the dead bacilli or of their products have been almost equally unsuccessful. The most we can say is that they possess a slight preventive capacity and confer a moderate grade of increased resistance which, however, rapidly passes off. As you know, I could spend an hour detailing the many most ingenious modifications of Koch's original tuberculin and derivatives of the bodies of the tubercle bacilli which have been tested, down to Dreyer's Oxford diaplyte vaccine, and what I may term the sensitised vaccine of Rappin of Nantes, the one obtained by treating the virulent bacilli with formalin and acetone (to remove the fatty substances) the other obtained by acting on the dried bacilli with fluoride of sodium and adding these to serum of oxen subjected to inoculation with the same bacilli.

There is a like history of the attempts to confer immunity by the employment of attenuated strains of the tubercle bacillus. I may remind you that for long years Koch and the Germans strongly upheld the unitarian view of the existence of one type or strain of tubercle bacilli common to all species. Only at the London Congress already referred to did Koch dramatically announce his conversion to the contrary view and announce it as his own discovery, heedless of the previous work of Straus and Grancher in France regarding the specificity of avian tuberculosis, and of Theobald Smith and Dinwiddie in the United States concerning the distinctiveness of the bovine tubercle bacillus. As early as 1880 Grancher and Ledoux, basing themselves on the fact that the avian bacillus is not pathogenic for man, endeavoured without success to utilise the avian strain as a vaccine for human beings. After Koch's pronouncement Behring, in 1902, appeared to have more success in employing emulsions of living human tubercle bacilli to immunise calves against the bovine disease by intravenous inoculation. But while these inoculations did not, it is true, set up tuberculosis, neither did they induce other than a very transient immunity, and, as Stanley Griffith pointed out in 1918, Behring's method of *Jennerisation* had a distinct danger for man, for the human bacilli might be discharged in the milk and so infect the cowsheds and those consuming the milk.

Equal lack of success has followed the attempt made by many to vaccinate human beings with the bovine strain, whether virulent or attenuated, and with the yet more attenuated, non tubercle producing strains of tubercle bacilli derived from cold-blooded animals like carp and other freshwater fish and tortoises. Personally, I remember vividly the excitement set up by Friedmann and his "turtle" bacillus. When Friedmann came from Berlin to the States I happened to be President of the Montreal Medico-Chirurgical Society. The profession in the United States turned their backs upon him because, instead of distributing his vaccine to all and sundry, he demanded that for the time he alone should administer it. He had, nevertheless, demonstrated his method before accredited societies in Germany and was a qualified physician, added to which he had clearly described the nature of his vaccine, and there was no reasonable doubt that it was as he described it, an emulsion of tubercle bacilli derived from a tortoise or turtle. Rather than make a martyr of him in the eyes of ordinary people, it seemed to the Council of our Society a more politic course to pursue to offer him to select 20 cases from among those willing to undergo his treatment, and to let him treat these on the one condition that, following upon the treatment, the cases should be under the supervision of tuberculosis experts chosen by the Society, who should report upon the progress of the same. I may add that two or three showed *definite* but temporary improvement, the remainder were unaffected or rendered worse rather than better. The method was obviously inadequate, and the test by no means fulfilled what was claimed by Dr Friedmann.

It is, I would urge, along these lines that we as a profession should deal with the Spahlinger treatment. Very many of the laity, and some of our profession, are convinced that Spahlinger is both a genius and an absolutely honest man. Do not let us, as a profession, make a martyr of him by refusing to have anything to do with him or his treatment, but on the contrary let us give him full opportunity to prove his contentions by asking him to treat cases selected by himself from a group fully diagnosed, and this under the supervision of well-known experts and under conditions agreed to by both sides as being beyond criticism.

Nevertheless, the studies of the last 45 years have elicited certain indications bearing upon immunity in tuberculosis and showing that it is within the boundaries of the possible. The first of these is that, whereas careful post-mortem examination, confirmed by intradermal and other tuberculin tests, show that at least 90 per cent. of the population at one time or another have been the subjects of tuberculosis, the deaths from this disease are only from about 10 per 10,000 of the population, the total death-rate from all causes being over 130 per 10,000. In other words, tuberculosis is one of the most curable of diseases and the majority of us have developed immunity. The next is that if, as happened during the war, men from the tropics, from regions where tuberculosis is practically non-existent, are brought to Europe, they rapidly succumb to tuberculosis in large numbers. This may well be interpreted as meaning that one attack of tuberculosis that has been recovered from in youth very largely protects against a later attack, an interpretation confirmed by the common observation that those suffering from lupus or from tuberculous glands rarely exhibit signs of pulmonary consumption; or put otherwise, if 90 per cent. have been infected at one or other time, only 7·5 per cent. of all deaths are from this disease. And these observations are on a par with what Calmette denominates "Koch's phenomenon." It was Koch's observation that tuberculous guinea-pigs react to subcutaneous inoculation of tubercle bacilli in a manner quite distinct from the reaction of healthy guinea-pigs. There is a similar difference when in place of living bacilli dead bacilli or bacillary products are introduced subcutaneously, and this is the basis of the intradermal and other cutaneous methods of diagnosis.

### CALMETTE'S RECENT WORK.

And thus I come finally to what I believe is the great advance of to-day—an advance equally important for the prevention of both human and bovine tuberculosis. I refer to the great work of my old friend Prof. A. Calmette, at one time professor in the University of Lille, and then one of the sous-directeurs under M. Roux, but now Directeur of the Institut Pasteur in Paris. I have not hesitated to follow during the last few minutes his development of the subject as given in his latest paper in the February number of the *Annales de l'Institut Pasteur*. From his long years of study of experimental tuberculosis, Calmette concludes on the one hand that a light infection with tuberculosis in infancy is not undesirable, since it confers upon the organism a sufficient power of resistance to protect against later reinfections, provided they are not massive, and certainly protects against a rapidly advancing miliary tuberculosis. On the other hand, he concludes that it is neither practicable nor possible to vaccinate adults who are already infected, and this because of the risk of provoking Koch's phenomenon which he regards as a "phenomenon of intolerance," to this extent, that the reaction it produces in old tuberculous lesions leads too often to caseation and softening and discharge of virulent germs from these foci into the circulation, and so, in some individuals, to a lighting up of what had been a relatively quiescent tuberculosis. He thus concludes that in a heavily infected country—for example, in Europe and the United States—antituberculosis vaccination is only possible among the newly born, or at most in quite young children or animals which from birth have been protected against infection.

For this purpose, after years of work he has found that growing virulent tubercle bacilli in glycerinated ox-bile, an alkaline medium rich in lipoids, and transferring to new medium every fortnight, in four years the cultures become no longer virulent either for cattle or guinea-pigs, although still virulent for the horse and rabbit. After 230 cultures in 13 years the cultures became harmless for all domestic animals. At most, a strong dose inoculated under the skin of a guinea-pig set up a cold abscess which underwent cicatrisation, leaving, it might be, a slight induration. There was no enlargement of the nearby glands.

It is this attenuated bacillus B. C.-G., or *Bacillus Calmette-Guérin*, that he uses for his vaccinations of both calves and new-born infants. Inoculated into various animals it has shown no return of virulence. And abundant experiments have shown that using it young animals not suffering from any pre-existing tuberculosis have the same resistance to tuberculous infection of later acquirement as have animals lightly affected by what may be termed a benign bacillary infection, latent or occult.

But now, upon examining the lymph glands of the animals inoculated with B. C.-G., Calmette finds that, although no tubercles are formed, the bacilli remain alive, it may be, for several months. He compares this condition with what we find in syphilitic tissues, in glanders and probably in leprosy. To distinguish from ordinary vaccination, in which we presume that the inoculated bacteria are rapidly destroyed, Calmette terms this particular form *premunition*. This long continuance within the tissues, without of necessity setting up active lesions, is not unlike what we find in syphilis. There the spirochætes may be present for years without causing gummata, and there also, so long as living spirochætes are in the system, the bearer is immune against reinfection with the disease.

If, therefore, argued Calmette, the human being or animal already infected with a mild or benign type of tuberculosis, such as lupus or caseous lymph glands, is protected against reinfection, though not protected against the possibility of the disease lighting up again from the existing foci, should the general resistance be greatly lowered, a yet more attenuated strain of bacilli may have the same protective effects without danger of subsequent lighting up of the active typical disease. And if the protection only lasts so long as the bacilli remain alive within the tissues, it can be maintained by reinoculation.

#### *Results of the B. C.-G. Treatment.*

And next he proceeded to test if this were so. He found that whereas rabbits 4 to 5 lb. in weight when inoculated with 1/1000 mg. of a culture of typical bovine tubercle bacilli died from the disease in 50 to 65 days, similar animals showed no tuberculosis when similarly inoculated, if, previously, they had been given intravenously a dose of 25 to 30 mg. of a culture of B. C.-G. made into an emulsion. And in young rabbits 15 to 20 days old a similar protection could be conferred by feeding B. C.-G. by the mouth—five to ten doses of 20 mg. of B. C.-G. repeated five to ten times. And the protection so conferred lasted at least six months. There is abundant evidence that in the newly born, bacilli pass with ease through the gastric and intestinal mucous membrane into the system.

Coming nearer to man, Wilbert, one of Calmette's collaborators, made an extensive test in French Guinea upon 15 chimpanzees and 50 pithecus monkeys. He found that inoculation or ingestion of up to 100 mg. of B. C.-G. cultures were equally without harmful effect in both species; at most there was some slight and temporary swelling of the lymph glands. The premunition conferred by suitable doses lasted at least a year; it could be continued by a repetition of the inoculations or ingestions at the end of the year, and animals so treated could live in habitual contact with other chimpanzees and monkeys infected with open tuberculosis without showing a sign of the disease. After two years of such cohabitation the animals remain uninfected. The method has been tested extensively upon cattle since September, 1924. Up to Jan. 1st, 1926, over 3000 calves had been inoculated in France, Germany, Holland, and Belgium.

The features of the treatment have been as follows. New-born calves, and new-born calves only, have been treated by a single inoculation into the loose tissue of the dewlap of 50 to 100 mg. of B. C.-G., the inoculation being repeated at the end of 12 months. Thus far not a single case has been reported of harmful effects. It must, however, be borne in mind that animals so treated are apt to give the tuberculin reaction. On the other hand, it is evident that here is provided a means whereby in a country whose cattle are heavily infected with tuberculosis, without changing the usual methods of dealing with the cattle or of bringing up the calves, tuberculosis may be eradicated from herds. All that is necessary is to vaccinate the calves with B. C.-G. during the first 15 days of their existence, and to revaccinate them in a year's time.

And now let us turn to man. It was Behring, if I mistake not, who first laid down emphatically that infection with tuberculosis in most cases dates from early childhood. This view Calmette espouses, and he gives striking figures. Combining the figures yielded by Paris, Vienna, Dresden, Breslau, Prague, and Stockholm, he shows that on the average 19·8 out of every 100 deaths of infants under 12 months old are from tuberculosis. After one year the mortality from this cause rapidly decreases. Thus in Prussia, for every 10,000 of the population the tuberculosis mortality is 24·02 for the first year, 17·01 for the second year of life, and 4·0 for the ages 5 to 15. A return made by the tuberculosis dispensaries in 80 French departments gives corresponding figures. 1302 tuberculous women were found to have given birth in 1922 to 1304 children (two had twins). Of these 1304 children, 327 were stated to have died of tuberculosis in their first year, or 24 per cent. The figures for Paris alone give the yet higher figure of 32·6 per cent. In Belgium, in the dispensaries of the National League, despite the attentions of the visiting nurses of the League, among the infants of tuberculous mothers, brought up by those mothers, the mortality in the first year is 20 per cent. These continental figures, it must be admitted, are greatly in excess of those of most British cities. In Liverpool, for example, in the last year of which we have record —1924—of 2118 deaths under one year only 34 were from tuberculous disease, or 1·6 in place of Calmette's 19·8 per cent. Still, it must be remembered that Calmette's figures are culled from tuberculosis dispensaries and other institutions which deal mainly with children of tuberculous parentage, and as Lissant Cox and MacNalty have pointed out, in one London tuberculosis dispensary the tuberculosis mortality among the children under 1 year was 22 per cent.

Since 1921, when Dr. Weill-Hallé began the work upon infants born in the maternity department of the Charité Hospital in Paris, the use of B. C.-G. for the vaccination of the new born has rapidly developed. In 1922, 217 new born were subjected to a course of these preventive ingestions of 1 cg. of B. C.-G. cultures. From July 1st, 1924, to Jan. 1st, 1926, 5182 infants were similarly vaccinated by the mouth in Paris and throughout France. Of these 5000 odd, 1817 have been individually reported upon for periods varying from 6 to 18 months. Of these 1317, there were 564 with premunition extending from a year to 18 months, 753 with premunition extending from six months to one year.

Take first the 564 cases of longer continuance. Only two died of presumed tuberculosis, 48 of disease of other nature, and this despite the fact that 281 were reared in contact with tuberculous parents or others suffering from the disease.

Of the 753 of shorter continuance, nine died of presumed tuberculosis, 53 from other conditions. Even if all the deaths had been from tuberculosis, the percentage mortality would have been only 8·2 instead of the usual Parisian percentage of 20 and more, and this although no less than 355 had been raised in habitual contact with infected persons. If we add together all the cases, out of 1317 infants vaccinated six months and more, only 0·7 per cent. had died of conditions diagnosed as tuberculous. I would ask you to compare this figure with the minimum mortality of 25 per cent. recorded for the tuberculosis dispensaries of France in general and the 32·6 per cent. of Paris.

Here, obviously, is a magnificent advance. As regards the few deaths from tuberculosis of infants subjected to this method of vaccination by the mouth, or premunition, it must be recalled that the existence is admitted of a small proportion of infants infected in utero. Further, it may well happen in the circumstances that another small proportion of infants become subject to massive infection by the human tubercle bacilli before the premunition becomes effective.

Possibly, I owe an apology for entering into such full detail regarding methods and results already well known to many of my audience. Occupied as I am with university administration, I acknowledge and bewail the fact that it is not possible for me to keep up my reading in all branches of medicine. At most I have been able to read regularly THE LANCET and the *British Medical Journal*. Thus I may easily have overlooked a wide British literature upon Calmette's work. Yet what has impressed me has been that in the above-mentioned organs in which matters of foremost interest to the profession are discussed, there has been altogether inadequate recognition of what I regard as the greatest and most notable advance in the arrest of tuberculosis accomplished in our generation. It is true that it is preventive and not curative. But it is the culmination of a series of investigations by one man and his collaborators carried on steadily since 1906. It is an admirable example of my to-day's thesis regarding advance in general—namely, that for long years work of the first order may be pursued, which for all those long years may well seem to the outside world, and even to our profession, to be purely academic, and devoid of interest save to the man of science, but which nevertheless leads eventually to some simple generalisation capable of confirmation the world over, not by the expert alone, but by the ordinary practitioner, which then at a bound becomes the guiding principle of a new era.

For if this principle of Calmette be grasped, then we see before us a simple means of eradicating both human and bovine tuberculosis. To give a dose by the mouth of an emulsion of B.C.G., to the newly born infant, and again to the child of 1 year and of 2, sets up no disturbance but carries that child over the period of most frequent infection with the active disease. The same is true of the calf. We still have to learn how far the premunition confers a more and more lasting immunity the more often it is repeated, to learn whether it resembles ordinary vaccination in this respect. This, however, appears to be indicated most definitely, that all children born into tuberculous households should be given this treatment. And it may well be that this should become the routine treatment for all children, as much a routine as vaccination proper.

# HOUR-GLASS STOMACH:

## THE OPERATION OF CHOICE.

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THE surgery of the stomach presents no more interesting problem than the treatment of hour-glass contraction; the conditions found at operation are so various that no one method can meet all cases, and often the judgment and ingenuity of the surgeon are taxed to the utmost.

I have employed many different procedures, and in many cases have had the results controlled by post-operative X ray examinations. Some methods I have discarded as unsatisfactory; others I have found successful in varying degrees, and so have gradually formed a fairly definite opinion as to their relative merits. Perhaps it may be of service and interest to others to follow the steps by which I arrived at this opinion, and to enable them to do so I will quote some cases illustrative of the methods employed, with in most cases pre- and post-operative X ray photographs.

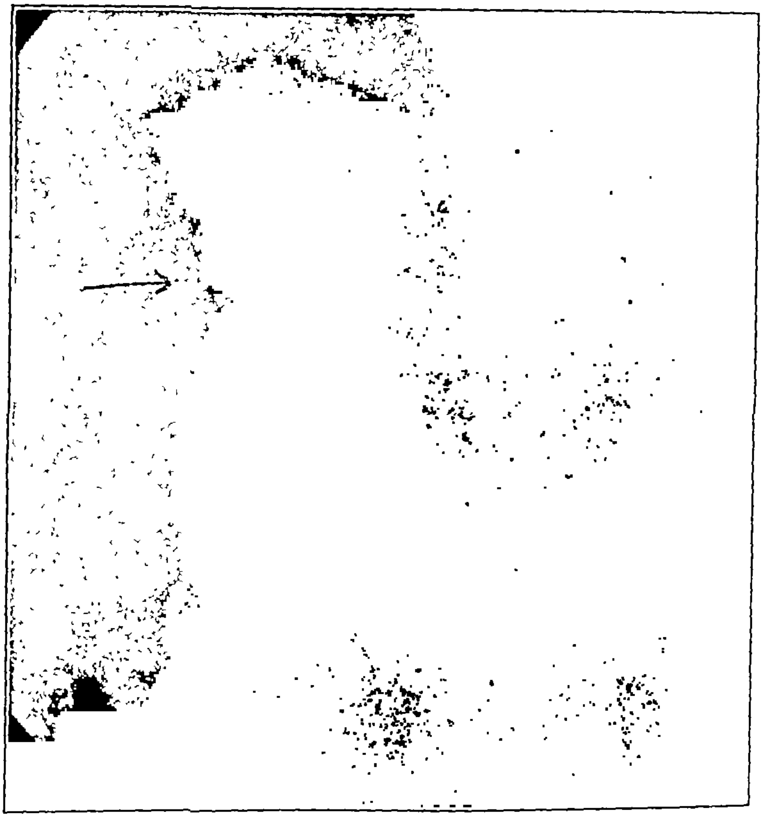
### *Diagnosis of Hour-Glass Stomach.*

Before doing so I would like to refer shortly to the diagnosis of the condition. About 80 per cent. of the cases occur in females and all, without exception, give a history of gastric trouble extending over many years. Most cases present the symptoms of pyloric obstruction, with or without the addition of active ulceration. Vomiting is the most marked and constant feature; the vomiting is, however, not usually of such a large quantity, and occurs at more frequent intervals than in pyloric stenosis. Pain comes on at varying intervals, from a few minutes to perhaps an hour after food, and is relieved by vomiting. As a rule there is nothing characteristic in the nature of the pain, but a few of my patients complained of a "squeezing" or "griping" pain in the left hypochondrium, and I consider that pain of this character is of value in suggesting a diagnosis.

Physical examination as a rule helps but little, but the failure to discover a dilated stomach in a suspected case of pyloric stenosis should arouse suspicion. The diagnosis really rests on the result of the X ray examination after a barium meal, and in this connexion there are two points to which I should like to call attention. First, there is frequently found a marked six-hour residue in the distal sac, even when there is no pyloric or duodenal obstruction, and this I take to be partly due to the delay in the delivery of the meal through the constriction, and partly to the fibrous ring of the constriction interfering with the normal peristalsis of the stomach. In the second place, the X ray plate, when taken with the patient standing up, invariably shows the constriction lying at a much lower level—and hence more accessible—than is found to be the case at the subsequent operation. The stricture also appears to be longer and narrower than is actually found with the patient lying on the operating table with the stomach empty. I believe that the weight of the barium distorts these stomachs, which are often atonic and thus the plate taken with the patient in the erect position tends to give an exaggerated and somewhat misleading picture of the actual condition present.

hour-glass constriction with very large distal sac; no pyloric stenosis. Operation: Cautery excision of ulcer; posterior gastro-enterostomy across constriction, the stoma extending

FIG. 2 (Case 2).

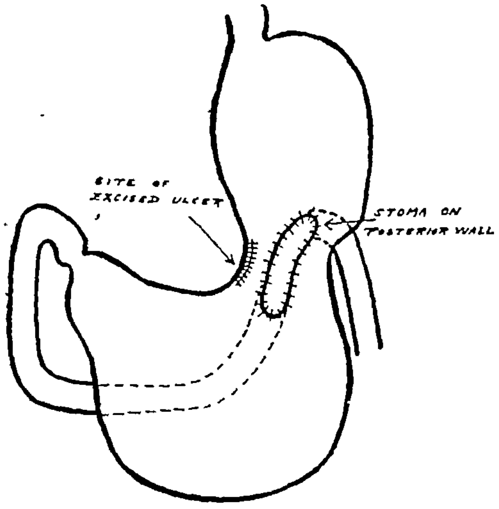


Post-operative X ray. Four weeks after a gastro-gastrostomy by adaptation of Finney's gastro-duodenostomy. Note persistence of constriction.

### *Methods Employed: Illustrative Cases.*

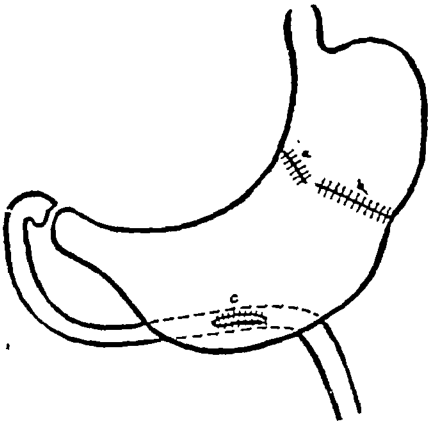
CASE 1. *Posterior gastro-enterostomy across the constriction and extending into both sacs with excision of ulcer.*—J. M., aged 38. Fifteen years' history of pain after food and vomiting. X ray: Well-marked constriction at junction of upper and middle thirds; ulcer crater on lesser curvature; constriction probably partly spasmodic. Operative findings: Active ulcer on lesser curvature; scars of several healed ulcers on posterior wall at same level; marked into both sacs (Fig. 1). Remark: An attempt to provide an outlet from both sacs by means of one large stoma, instead of by a separate stoma into each sac. Result: Patient relieved of pain but suffered from discomfort and vomited occasionally. Post-operative X ray: No evidence of con-

FIG. 1 (Case 1).



Posterior gastro-enterostomy across constriction, followed by marked retention of food in dilated distal portion of stomach.

FIG. 3 (Case 3).



Diagrammatic representation of condition at conclusion of operation showing (*a*) site of excised ulcer, (*b*) suture line after Finney's operation on constriction, (*c*) posterior gastro-enterostomy into distal sac.

striction; barium passing rapidly through stoma; large six hour residue in part of stomach corresponding to distal sac. Note: Apparently a considerable portion of the food passed over the highly placed stoma into the dilated atonic distal portion of the stomach and marked delay occurred there, even in the absence of pyloric stenosis giving rise to persistent discomfort and occasional vomiting. The result in a similar case in which the same operation was performed was also unsatisfactory and consequently, the method was discarded.

FIG 4 (Case 4)

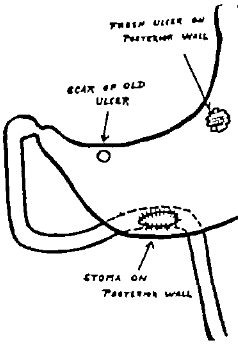


Diagram to show condition found at second operation.

FIG 5 (Case 4)

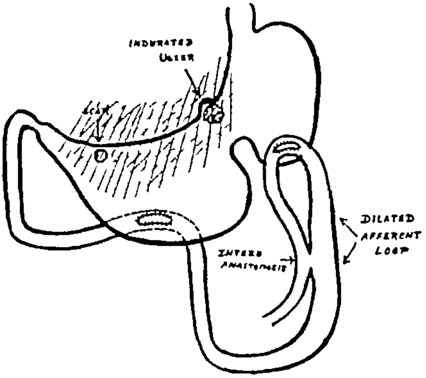


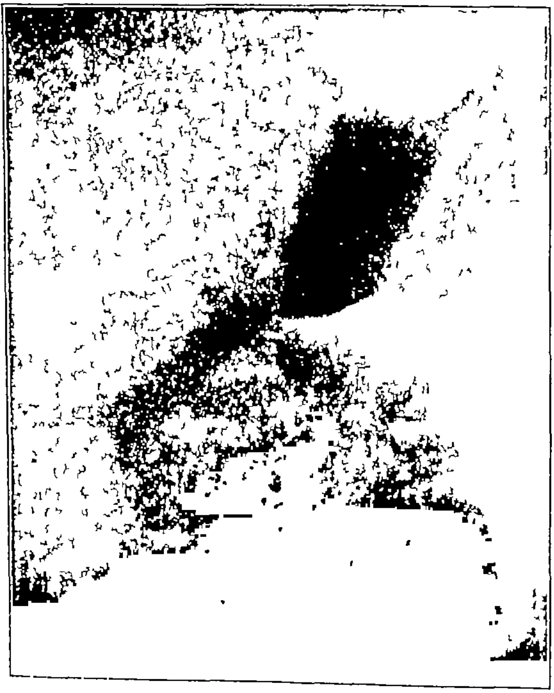
Diagram of final condition showing anterior gastro-enterostomy into proximal sac and entero-anastomosis

CASE 2 *Finney's pyloroplasty on constriction with excision of ulcer*—Mrs. S., aged 45 History of many years trouble X ray: Ulcer demonstrated high up in the lesser curvature with very marked constriction. Operation: Ulcer excised and the two sacs united by operation similar to Finney's gastro-duodenostomy Result: This patient made a very satisfactory recovery but an X ray four weeks after operation showed well-marked constriction still present (Fig. 2) Unfortunately, she cannot now be traced.

CASE 3. *Finney's pyloroplasty on constriction with excision of ulcer and gastro-enterostomy*—Miss X, aged 52 History: Extending over 30 years. X ray: Very marked constriction demonstrated high up in stomach, with marked retention in both sacs. Operation: Ulcer at site of constriction excised and the two sacs united by the method of Finney's gastro-duodenostomy; posterior gastro-enterostomy into the large lower sac as stricture of the pylorus was also present (Fig. 3). Result: Symptoms were quite relieved and have remained so up to the time of her last visit some nine months later, although an X ray at that time showed a considerable amount of constriction, with the stoma from the distal sac functioning normally Note: The *immediate* post-operative appearances in this and in Case 2 were excellent the stomach appearing normal in shape and contour but subsequent examination in these two cases demonstrated the liability to recurrence and therefore, I have discarded this method also.

CASE 4 *Anterior gastro-enterostomy into upper sac combined with entero-anastomosis at a later date*—Miss G, aged 28 First operation: In 1914 I excised an ulcer in the anterior

FIG 6 (Case 6)



X ray 18 months after operation. Rapid emptying of barium through anastom proximal sac to the duodenum after a partial gastrectomy wall near the pylorus and did a posterior gastro-enterostomy. Patient returned in 1921 with recurrence of symptoms. As teeth were very foul these were extracted and the abdomen opened a month later. Second operation: I found an indurated ulcer the size of half-a-crown on the posterior wall of the stomach, *above* the site of the gastro-enterostomy and densely adherent to the pancreas (Fig. 4). I carried out a transgastric excision of the ulcer. Result: Patient had complete relief for almost a year. Symptoms then recurred and an X ray showed a well-marked constriction in the pars media with the stoma from the distal sac functioning normally. Third operation: At the subsequent operation I found the pyloric half of the stomach buried in dense adhesions, in the centre of which an indurated ulcer could be felt. An anterior antecolic gastro-enterostomy with a long loop was performed into the upper sac. Following this she had relief from pain but vomited at frequent intervals. An X ray six weeks later showed the food passing through this new stoma into a greatly distended coil of the small intestine, which the radiologist considered to be the efferent loop. Fourth operation: On opening the abdomen for the fourth time I found that the *afferent* loop of the anterior anastomosis was greatly dilated and hypertrophied. Anastomosis was then performed between the afferent and efferent loops, and this provided complete relief (Fig. 5). Note: The occurrence in this case of fresh ulceration above the site of a functioning gastro-enterostomy is of interest.

Case 5. *Posterior gastro-enterostomy into proximal sac.*—Miss A., aged 50. History: Perforated gastric ulcer 22 years ago; two operations in interval by other surgeons—namely, resection of the hour-glass constriction, and division of adhesions, both of which operations relieved for several years; recurrence of symptoms for past year. X ray: Well-marked cicatricial hour-glass with a considerable six-hour retention in both proximal and distal sacs. Operation: Pyloric half of stomach buried in dense adhesions, among which could be felt an indurated ulcer adherent to liver; no attempt made to separate; posterior gastro-enterostomy into upper sac. Result (18 months later): No discomfort, pain, or vomiting; has put on weight. X ray: Proximal sac empties rapidly through stoma—distal sac not demonstrated.

Case 6. *Excision of distal sac.*—Miss H., aged 38. History: Gastric trouble for seven years. X ray: Marked constriction in mobile ptotic stomach. Operation: Excision of distal sac with anastomosis of stomach to stump of duodenum—i.e., partial gastrectomy by method of Bilroth 1. Result (18 months later): Patient reported herself as being "splendid and able to eat anything." X ray: Stomach emptying rapidly through new opening (Fig. 6). Note: In other cases the remaining portion of stomach has been anastomosed to jejunum—i.e., partial gastrectomy after method of Polya 2, and in all cases immediate and after-results have been excellent.

### *Unsatisfactory Methods of Treatment.*

It will be noted that I have not made use of two methods which have been advocated for the treatment of hour-glass stomach—excision of the stricture with resulting end-to-end anastomosis—i.e., the so-called "sleeve" resection, or the method of gastro-gastrostomy by simple anastomsis between the two sacs. With regard to the first, the results as reported by other surgeons are not sufficiently satisfactory to encourage me to try it on any of my earlier cases and, later on, it seemed to me that the cases on which it could be employed were just those in which partial gastrectomy was indicated, and that, while the operation was quite as severe, the results were less likely to be satisfactory. One of the cases reported above (Case 5) had already had a sleeve resection done by another surgeon. As regards simple gastro-gastrostomy, I considered that the adaptation of Finney's pyloroplasty to the constriction gave a better anatomical and mechanical result, and since the latter has proved unsatisfactory, I saw no reason to hope that the former would be more successful.

### *Conclusions.*

The conclusions at which I have arrived as the result of my experience controlled by X rays are: 1. Partial gastrectomy is the operation of choice whenever possible, and the percentage of cases in which it is possible rapidly increases with experience. 2. When gastrectomy is not feasible owing to adhesions around the distal sac, or to the high position and small size of the upper sac, I believe a posterior gastro-enterostomy into the upper sac is the best procedure. 3. When the distal sac is large or obstruction of the pylorus or duodenum also exists, a second stoma should be provided from the distal sac into the same or another loop of jejunum. In cases of difficulty I have no hesitation in performing an anterior gastro-enterostomy with, or without, an entero-anastomosis. 4. I regard as unsatisfactory all direct attacks on the constriction either by means of a single gastro-enterostomy across the constriction (the opening extending into both sacs) or by any plastic operation such as Finney described for stricture of the pylorus.

## A NOTE ON THE CAUSATION OF GYNÆCOMASTIA (MAMMARY FEMINISM).

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Gynæcomastia—or as one might term it, "mammary feminism"—is the condition of enlargement of the breast in a male causing the organ in question to appear like that of a female; this condition may be bilateral or unilateral. The *bilateral* form may, in some cases, be "primary" or "essential"—that is to say, really of unknown developmental causation; in fact, it may be a localised "mammary form of feminism," unaccompanied by any other signs of feminism; but in other cases (usually accompanied by various obvious bodily, and possibly psychical, signs of feminism) it is definitely of endocrine origin, and secondary to deficiency of the testicular interstitial gland. Castration may be a cause of gynæcomastia, if performed during the period of early sexual activity; or the deficiency of the interstitial gland may be due to congenital or acquired disease, such as, for instance, testicular atrophy caused by the orchitis of mumps. It can hardly be caused by gonorrhœal or tuberculous epididymitis, because in such cases the interstitial gland of the body of the testis is not destroyed. It need not invariably accompany conditions of male sterility, for the seminal functions of the testis may be destroyed without destruction of the interstitial gland. If the testes are excised, destroyed, or injured some years after the establishment of puberty, gynæcomastia may be the only (or at least the chief) result in regard to alteration in secondary sexual characters. So far I am in accordance with the conclusions of J. Decléty and others (see below).

The occurrence of *unilateral* gynæcomastia can obviously not be explained in the same way any more than could unilateral acromegaly (if, as has been claimed, there really were such a condition)[1] be attributed to an endocrine disturbance of pituitary (hypophyseal) origin. Certain cases of unilateral gynæcomastia have followed injury to the testis of the same (or still more rarely of the opposite) side,[2] and Decléty[3] points out that in such cases the injury to the testis was received during the period of full sexual development, not before the onset of puberty. Decléty believes that the cases in question can be explained on the supposition that in males the normally active testis, apart from its hormonic (endocrine) effects, exercises a reflex nervous inhibitory action on the growth of the breast, which would otherwise in normal males about the period of puberty tend to develop as the female breast does under the influence of the hormones of puberty; a traumatism, even of slight degree, to one testis may, he suggests, remove this inhibitory action.

Here I would also refer to Condomine's case[4] in which *bilateral* gynæcomastia followed severe injury to *both* testes in a young soldier aged 21 years.

Decléty[5] goes even so far as to suggest that cases of unilateral gynæcomastia are *always* due to a congenital or acquired testicular lesion, especially a testicular traumatism (usually of the same side as the gynæcomastia, rarely of the opposite side). It seems difficult to accept this conclusion in view of the cases of unilateral gynæcomastia that have been published by various observers without reference to any lesion or traumatism to either testis.

The accompanying portrait (see figure) is that of a man, aged 34 years, whom I saw in 1898, with unilateral gynæcomastia of the right side I saw him again in 1901, on account of some bronchitic trouble, and I noted that the right mamma felt as if it contained genuine gland tissue. As far as I remember, he told me nothing of any testicular injury.

It is likewise not easy to apply Decléty's views to the rare examples of mammary enlargement in men following the operation of prostatectomy. Two such cases were recorded by E. Kondoleon[6] in 1920, both in men aged 70 years. In one case the enlargement was unilateral; the right breast began to swell soon after the operation, attaining the size of a walnut, but after a few months the swelling gradually subsided. In the second case the enlargement was bilateral, commencing on the left side about three months after the operation. The progress in the second case is not recorded, as the operation was recent at the time when the paper was published.

I should here like to allude to a very rare and almost acute kind of bilateral gynæcomastia occurring in young men as a pathological endocrine (hormonic) result of a primary adeno-carcinomatous growth of the suprarenal cortex. The first case was shown me in November, 1915, by my then surgical colleague, Dr. J. P. zum Busch, and I have his permission to describe it.[7]

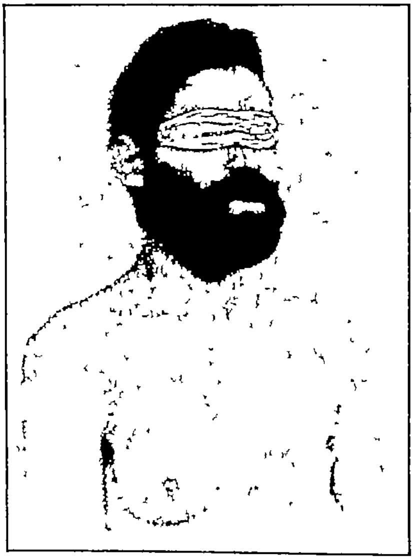
The patient was a male cook, aged 27 years, admitted to hospital on Nov 9th, 1915. For the last two months he had noticed painless enlargement of both mammæ, and he could squeeze a few drops of a slightly milky fluid from the nipple of each breast For the last three weeks there had been also considerable (rather soft) swelling of the lymphatic glands on the left side of the neck. The man died on Dec 2nd, 1915, and post-mortem examination (Dr Hans Schmidt) showed an extensive malignant hypernephroma growing from the cortex of the left adrenal gland, with great numbers of metastatic growths in the lungs. There were some secondary nodules attached to the ribs and vertebral column, seen on clearing out the contents of the thorax; the mesenteric glands were also involved. The enlarged lymphatic glands on the left side of the neck had already, in November, been found (by operation) to contain a very vascular new growth Microscopic sections from one of the enlarged mammæ showed glandular tissue resembling that of an ordinary mamma in the female In this case it seems that a hormone-like substance derived from the actively growing cells of the adrenal cortical adeno-carcinoma had stimulated the male mamma to take on an active secreting function, normal to the female mamma. Prof S G Shattock also kindly examined the sections in this case

Though this observation appears at present to be almost unique, I feel confident that sooner or later it will be confirmed by many similar ones. It may be compared to the remarkable Bittorf-Mathias case, as finally described by Prof E. Mathias,[8] who made the post-mortem examination in July, 1919

The patient was a man, aged 20 years, who had suffered from dyspnœa since March, 1918. In August, 1918, a progressive enlargement of the mammæ was noticed and a few months later the testes commenced to atrophy In February, 1919, the patient became sexually impotent, and in March, 1919, a tumour in the left part of the abdomen was observed The patient developed metastatic tumours in the liver and signs of compression of the inferior vena cava. He died in July, 1919 The necropsy showed that the case was one of malignant cortical hypernephroma. Both mammæ, which had somewhat diminished in size before the man's death, consisted of loose connective tissue containing true mammary glandular tissue. The testes were extremely small; microscopically, there was evidence of spermatogenesis; the interstitial cells were hardly developed.

It would be interesting to know whether enlargement and activity of the male mammæ is ever associated with (benignant) adrenal cortical adenoma, as it evidently may be with (malignant) adeno-carcinoma, and whether any cases of ordinary chronic bilateral gynæcomastia in man are associated with adrenal cortical adenoma.

A point of great interest in Dr. zum Busch's case and in the Bittorf-Mathias case (which absolutely confirm each other) lies in the fact that in both of them a kind of rapidly developed "mammary feminism" or gynæcomastia was associated with a malignant cortical hypernephroma of the suprarenal gland—that is to say, that in both cases the "mammary feminism" developed as a *morphogenic*, endocrine, or hormonic result of functional activity in the carcinomatous cells of adrenal cortical parentage. I need scarcely add that it is well recognised that adeno-carcinomatous growths may sometimes more or less retain the functional, as well as the morphological, characters of the normal glandular cells from which they are derived (compare the well-known presence of a bile-like substance in primary carcinomata arising in cirrhotic livers) But the morphogenic effect of the growth in the above cases (the two young men) was very different to the previously recorded morphogenic effects of primary adenoma or adeno-carcinoma of the suprarenal cortex in children and young women[9]



Unilateral (right) gynæcomastia in a man aged 34 years.

I should here also mention that true bilateral hypertrophy of the breasts in males due to hormonic (endocrine) stimulation has been noted in certain rare cases of teratoma testis and its metastases Prof. H. W. B. Cairns included two such cases in his recent Hunterian lecture on Neoplasms of the Testis,[10] and he referred to other cases (one each) observed by E. Garbarini, J. V. Cooke, Warthin, and A. Malloch. In three of the cases (those of Cooke, Warthin, and Malloch) chorion-carcinoma was present in the testicle. Cairns remarked that the cases in question provided "indirect evidence in support of E. Starling's original contention[11] that the normal fœtus produces a hormone which acts directly upon the breasts"

### *References*

1 Cf. Lacaille "Trois cas d'acromégalie paraissant unilatérale," Société de Médecine de Paris, meeting of April 10th, 1914. The existence of such cases may be denied but why should not a unilateral response to some general hormonic stimulation occur in very exceptional cases? Can one not conceive the possibility of what one might call a "potential hemi hypertrophy" being present, ready to be converted into actual unilateral hypertrophy or gigantism by hormonic stimulation? Moreover, in thyreotoxism or hyperthyroidism (that is to say, in Graves's disease) the exophthalmos is occasionally unilateral or more marked on one side than the other (F. P. W.)

(*References continued at foot of next page*)

# Clinical and Laboratory Notes.

## A CASE OF RECURRENT INTUSSUSCEPTION.

By Philip R. Hawe, M.B., Ch.B. Liverp.,
SURGICAL ASSISTANT, DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL.

The following is a record of a case of recurrent intussusception which occurred in a female, aged 40 years:—

The patient complained of several attacks of very severe pain in the abdomen, associated with a palpable lump deep to the abdominal wall. Up to three months ago, when the attacks commenced, she had had no abdominal trouble whatever. The pain commenced just to the left of the umbilicus. At first typically colicky in nature and localised in distribution it became a more general agonising cramp, which caused the patient to sweat, and doubled her up, leaving her quite exhausted. She applied pressure to the part and found a tender lump about the size of an orange which varied in consistency, becoming harder with the onset of each pain. The lump was palpable as a rule for some hours after the attack had subsided.

These accounts were confirmed by her doctor, who was called to see her several times, and also by Mr. K. W. Monsarrat. The attacks lasted from one to eight hours, and occurred about three times a week. They may have had some relation to the taking of food, as occasionally they commenced an hour or so after a meal. The intervals were not quite free, as a dragging pain was present continually in the right iliac fossa. There was no history of melæna, and constipation was only occasional. Borborygmi and flatulence had, since the onset of these attacks, been usual after all types of food. History relating to urinary and other systems appeared normal. Some loss of weight had occurred since the onset of the illness.

After admission to hospital several abdominal examinations were made with varying results. On one occasion a mass was palpated in the region of the transverse colon, which slowly became smaller and smaller on gentle manipulation until it disappeared. At its largest the lump was soft and tender, somewhat elongated, and about the size of a closed fist; it did not pit on pressure, nor was it definitely mobile, but, as described, gradually disappeared. Further examination revealed nothing else abnormal except tenderness in the right iliac fossa. There was no visible peristalsis, and examination of rectum, urine, fæces, and also an X ray examination gave negative results. As a rule, during the intervals no lump was present.

As the lump had been palpated quite definitely on several occasions, even after enemata had been administered, operation was undertaken. On opening the peritoneal cavity the transverse colon presented, and the nature of the lesion was immediately evident. An intussusception of the colocolic type was present and was reduced without the least difficulty. The apex of the intussusception, which had reached the middle of the transverse colon, was formed by the wall of the cæcum with the opening of the appendix as centre. There were no adhesions between the layers of the intussusception, but the apex formed a mass which was circular in shape, very thickened and œdematous, and about the size of a five-shilling piece. The appendix was adherent to the posterior surface of the cæcum and extended towards the hepatic flexure behind the ascending colon, to which it was also bound. It had evidently been secondarily invaginated, base first, with the rest of the cæcum into the colon as the intussusception progressed. Appendicectomy was then performed. In view of the induration of the cæcum round the base of the appendix, it was thought better to excise this part of the cæcal wall. No evidence of new growth or cause for the intussusception could be found, with the exception of an excessively mobile cæcum and ascending colon. Accordingly, after closure the cæcum was fixed to the iliac peritoneum to prevent any possibility of recurrence. From the situation of the apex of the intussusception it was obvious that the appendix had not been primarily involved. Subsequent microscopical examination of the excised portion of the cæcum showed œdema with some fibrosis and mild inflammatory reaction, but no sign of new growth.

It is quite clear from the history and the operation findings that the patient had suffered from a series of recurrent intussusceptions with spontaneous reduction after the attacks had lasted some hours. The absence of melæna and of adhesion between the layers of intussusception is to be explained by the failure of interference with the blood-supply of the affected parts. This type of intussusception probably corresponds to the rare type of recurrent intussusception of older children which, in contrast to the intussusception of infants, rarely, if ever, gives rise to acute complications. Some irregularity of peristalsis seems to be the only explanation of its occurrence. As is well known, some form of neoplasm usually originates intussusception in adults. In this case, however, when the intussusception had once occurred the œdematous apex predisposed to a recurrence. Some of the attacks had been related to the taking of food, the pain having been felt about an hour after meals. Probably the gastrocolic reflex had occurred as usual, followed by active cæcal movements, and after some time the intussusception had reached dimensions sufficient to give rise to severe symptoms.

My thanks are due to Mr. Monsarrat for his permission to publish this case.

## PNEUMOCOCCAL MENINGITIS: CISTERNAL PUNCTURE.

By A. H. Douthwaite, M.D., M.R.C.P. Lond.

The publication in The Lancet of April 10th by Dr. V. M. Synge of a recovery from pneumococcal meningitis prompts me to put on record the following case which was under my care:—

A girl, aged 15, was first attended on July 25th, 1925, on account of headache. She had suffered for several years from chronic nasal catarrh. Pain in the cranial vertex started two days previously and was attributed to sunstroke following a long char-a-banc ride.

On *examination* no abnormality was found of the cranial nerves, tendon, and skin reflexes. Kernig's sign was absent. The skull was tender to percussion. The decubitus was striking, the girl lying on her side with the head well retracted, a position which was retained when she turned from one side to the other. Temperature 100°F., pulse 120, respiration 20. No other signs.

On the following day Kernig's sign was present, as was also blurring of the right optic disc. Lumbar puncture was performed, and 30 c.cm. of turbid fluid removed. This contained 0·7 per cent. albumin, 1000 cells per c.cm., of which 48 per cent. were polymorphonuclear leucocytes. Cultivation gave a rich growth of pneumococci (not typed). On the 27th head retraction was less marked and the temperature had fallen to 99°. The plantar responses were extensor. Nystagmus present. Every two to three days for the subsequent two weeks profuse epistaxis occurred with transitory relief of headache. The evening temperature rose during this time to 103°. Over the same period three further lumbar punctures were performed and 20 c.cm. of Pasteur antipneumococcic serum introduced intrathecally. On August 9th cisterna magna puncture was carried out

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*(References continued from previous page.)*

2. E. Apert and J. Decléty: "Gynécomastie unilatérale à la suite de traumatisme des bourses," Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris, third series, 1918, xlii., 1091–95. Other cases are cited in J. Decléty's Thèse de Paris, 1919, No. 193. There is, however, some mistake in regard to Cockayne's case, cited by Decléty as having been published in the Proceedings of the Royal Society of Medicine for 1914. Dr. E. A, Cockayne informs me that he never published such a case.
3. J. Decléty: Loc. cit. (Thèse de Paris, 1919 No. 193).
4. Condomine: Abstract in Presse Médicale, Paris, 1920, xxviii., 850, from the Montpellier Médical of Nov. 1st, 1920. I have not seen the original paper.
5. Decléty: Op. cit., p. 40.
6. E. Kondoleon: "Vergrösserung der Brustdrüse nach Prostatektomie," Zentralblatt für Chirurgie, Leipzig, 1920, xlvii., 1098.
7. Cf. F. Parkes Weber: British Journal of Dermatology and Syphilis, London, 1926, xxxviii., 7–8.
8. A. Bittorf: "Nebennierentumor und Geschlechtsdrüsenausfall beim Manne," Berl. klin. Wochenschr., 1919, lvi., 776; E. Mathias: Virchow's Archiv, Berlin, 1922, ccxxxvi., 451.
9. Cf. Bulloch and Sequeira: Trans. Path. Soc. Lond., 1905, lxvi., 189; Glynn: Quart. Jour. Med., Oxford, 1912, v., 157; Gordon Holmes: Ibid., 1925, xviii., 143; Sir H. Rolleston: West London Med. Jour., 1925, xxx., 105; E. Mathias: Virchow's Arch., 1922, ccxxxvi., 446; Helmut Schmidt: Ibid., 1924, ccli., 8. All of these give abundant references to the literature.
10. Cairns: The Lancet, 1920, i., 847.
11. Starling: The Lancet, 1905, ii., 581.

under a general anæsthetic (rendered necessary by head retraction) and 35 c.cm. of turbid fluid containing 800 cells per c.cm. removed; 10 c.cm. of serum were introduced. Head retraction and Kernig's sign were absent on the following four days and the patient became mentally more alert. This process was repeated on the 20th owing to a gradual return of all symptoms except epistaxis. The cerebro-spinal fluid then contained 0·4 per cent. albumin and 57 cells per c.cm. Steady improvement followed and the temperature was normal by Sept. 10th.

When seen again in January, 1920, no abnormal signs could be detected and, with the exception of occasional headaches in the right temporal region, no symptoms could be elicited.

Puncture of the cisterna magna is actually a very simple performance, and appears in some cases to produce greater relief than that procured by the lumbar route. Any serum introduced will, of course, reach the affected areas in greater concentration by the former method.

Worthing.

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## A CASE OF $CCl_4$ POISONING

### DUE TO THE BURSTING OF A PATENT FIRE EXTINGUISHER.

By L. A. Dingley, M.D. Lond., F.R.C.S. Eng.,
HON. SURGEON, WEST BROMWICH AND DISTRICT HOSPITAL;
VISITING SURGEON, HALLAM HOSPITAL.

The risk of a repetition of the accident described in this article with possibly more serious consequences justifies the reporting of the case, together with a brief summary of the effects produced by inhalation of the chemical in question, especially as a search in the literature has failed to show any cases previously reported.

The patient is a motor-'bus driver. On March 8th he stopped his 'bus, and his attention was called to the fact that a passenger had accidentally knocked down the patent fire extinguisher carried by these vehicles. He climbed down from his seat and, on examination, found it was leaking, and decided, owing to the leakage and bad smell, to do away with the contents. Whilst pulling the handle of the extinguisher out, preparatory to emptying it, the gas and fluid came up into his face. He first noticed burning of his eyes, and rushed into a neighbouring shop where he was advised to put his head into a bucket of water to wash out the fluid. This he did, and then lost consciousness for about 45 minutes.

A policeman on duty near by was called in, and he found the patient propped up in a chair with his head supported by an onlooker. He was quite unconscious, with eyelids closed, which on opening disclosed a fixed and glassy stare, his mouth was closed but easily opened, the pulse was imperceptible, and the mirror test showed that respiration had ceased. With commendable promptitude the policeman commenced artificial respiration by Silvester's method, and carried on for 20 to 25 minutes when the patient commenced to breathe with faint and shallow respirations. He was then given a few ounces of strong tea.

When seen by me he was just regaining consciousness, his eyes were red and injected, he was trying to sit up, and behaving generally like a person coming round from an anæsthetic. His breathing was rather heavy and his pulse 80 and regular. The patient was sent on to the hospital, and on the way the policeman informed me that he again became unconscious but continued to breathe evenly and regularly and his pulse remained slow and full, and he recovered consciousness in a few minutes.

Condition on *Admission*.—The patient had practically recovered consciousness and showed no physical signs of note. Owing to the difficulty and delay in discovering for certain what the extinguisher contained, and in order to avoid any possible delayed action of the drug on the heart, the patient was kept in bed for two weeks, and then allowed up for a few days. His convalescence was uneventful. Before discharge exercise tolerance tests were carried out and provided quite satisfactory.

The motor omnibus company gave me every assistance and were good enough to reply promptly to my letter, informing me that the chemical used in these extinguishers was carbon tetrachloride ($CCl_4$), and that it was 99·95 per cent. pure and contained neither acid nor alkali. Carbon tetrachloride is a heavy, colourless liquid with an aromatic odour and boiling at 76·7° C. It is readily vaporised into a colourless vapour 5·33 times heavier than air. This property, together with its non-inflammability, makes it a most valuable agent in shutting out the air from surfaces blanketed by it, thus rendering it most useful in extinguishing fires.

Carbon tetrachloride first claimed the attention of the medical profession in December, 1865, when J. Y. Simpson, of Edinburgh, suggested its use as a general anæsthetic. Its alleged heart depressant properties, however, soon led to its abandonment. Lewin[1] reports that it is about twice as toxic as chloroform. In the early part of the century it was used as a shampoo, but Colman[2] issues a warning, stating that it is dangerous to life; a fatality from similar use has been reported.[3] Carbon tetrachloride is used commercially in the preparation of golf balls, and a case of intoxication has been reported.[4] It is also in use in millinery establishments where a mixture of this chemical with benzol is used as a cement for fixing material to hat shapes. Several cases of non-fatal poisoning were reported by E. B. Starr,[5] but in these cases the symptoms seem to have been mainly due to benzol.

Medically carbon tetrachloride has been recommended as a treatment for hookworm by Hall,[6] but the treatment has been shown by Meyer and Pessoa[7] not to be devoid of danger. The pharmacology of carbon tetrachloride has been worked out in great detail by Lamson and his co-workers[8] at the Johns Hopkins University, and from this work several important facts are made evident. The case under consideration was caused by respiration of the drug, and for full particulars of the effects when taken by the mouth, by injection into veins or intrathecally, and for the pathological findings, reference should be made to the original article. If large doses are inhaled, respiration ceases and the blood pressure falls rapidly, which, in early cases, may be combated by continuous and persistent artificial respiration. It further transpires that alcohol is distinctly dangerous, and should not be given, as it greatly increases the rapidity of absorption and the toxicity of any of the chemical which may have been swallowed.

### *Treatment.*

In cases of escape of this gas, it is important to see that no person, especially if helpless or injured, is allowed to remain on the floor level, owing to the heaviness of the gas. The respiration should be carefully watched, and should be artificially carried out if necessary, and be persevered with for a very considerable time. As a stimulant alcohol should be avoided, resource being made to some watery solution such as strong tea or coffee. Such cardiac stimulants should be used as are used in chloroform poisoning.

### *References.*

1. Lewin, L.: Ueber giftige Extraktions-Mittel für Fette, Wachse, Harze und andere ähnliche wasserunlösliche Stoffe, Ztschr. der deutsch. Öl- und Fett-Ind., 1920, xl., 421
2. Colman, H. C.: A Dangerous Dry Shampoo, The Lancet, 1907, i., 1709.
3. Jour. Amer. Med. Assoc., July 31st, 1909.
4. Brit. Med. Jour., Sept. 25th, 1920.
5. Starr, E. B.: Journal of Industrial Hygiene, 1922–3, iv., 203
6. Hall, M. C.: Use of Carbon Tetrachloride for the Removal of Hookworms, Jour. Amer. Med. Assoc., 1921, lxxvii., 1641.
7. Meyer, J. R., and Pessoa, S. B.: A Study on Toxicity of Carbon Tetrachloride, Amer. Jour. Trop. Med., 1923, iii., 177.
8. Lamson, P. D., Gardner, G. H., Gustafson, R. K., Maire, E. D., McLean, A. J., and Wells, H. S.: The Pharmacology and Toxicity of Carbon Tetrachloride, Jour. Pharm. and Exper. Therap., 1923–4, p. 215.

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Street Accidents in Sheffield.—At the annual meeting of the Sheffield Royal Hospital it was stated that the hospital deals with 400 street accidents a month, many of them due to the carelessness of pedestrians.

The Government of Bihar and Orissa has constituted a permanent cadre of public health officers consisting of 27 assistant surgeons. The new cadre is under the Director of Public Health and is distinct from the medical department.

# Medical Societies.

## ROYAL INSTITUTE OF PUBLIC HEALTH: ANNUAL CONGRESS, BRISTOL, MAY 19TH–24TH.

THE Congress, which ended at Bristol on Monday, was attended by more than 300 delegates, a number of whom came from distant parts of the Empire and from foreign countries.

### *Opening Addresses.*

The inaugural meeting was held in the Great Hall of the University. The Lord Mayor of Bristol welcomed the visitors.

The DUKE OF BEAUFORT (High Steward of Bristol, President of the Congress), after referring to the wonderful progress made in the last 50 years, said the bewildering programme prepared for the delegates indicated that hygienists did not intend to rest on their laurels, and expressed his conviction that such congresses must play an important part in shaping public opinion on health matters. Alderman FRANK SHEPPARD (Chairman of the Housing Committee) claimed the great interest now taken in housing conditions as of good augury. The Under Secretary of the Egyptian Health Department voiced the strong desire of the Government of King Fuad to promote the cause of public health both within and without Egypt. The geographical position of Egypt gave her an important share in the defence of humanity from the scourge of disease. The Dean of Bristol expressed the welcome of the churches and his belief that the visitors would find that Bristol was giving a noble lead in caring for those engaged in her industrial activities. Miss TOWNSEND (Chairman, Infant Welfare Association) referred to the enthusiasm of the Bristol women in this work. Dr. C. BENTLEY (Director of Public Health, Bengal) described how cholera and other diseases were being brought under control. Brief speeches were made by representatives from France, Belgium, California, and Australia, and subsequently a reception was given to the delegates by the Council of the University, the guests being received by the Vice-Chancellor and Mrs. LOVEDAY.

The work of the Congress was divided among five sections: (1) State Medicine and Municipal Hygiene; (2) Naval, Military, Air, and Tropical Diseases; (3) Industrial Hygiene; (4) Pathology, Bacteriology, and Biochemistry; and (5) Women and the Public Health.

### *Bovine Tuberculosis.*

The problem of improving the milk-supply was opened by Dr. W. G. SAVAGE (M.O.H., Somerset) with a carefully drawn-up criticism of the working of the Tuberculosis Order which should be of great value to the Board of Agriculture. The Order and Regulations read well from the preventive point of view, but do not so work out in practice, says Dr. Savage. So far, in Somersetshire, the manifestly tuberculous cows are being destroyed too late, there is a marked absence of effort to find udder disease at an early stage, there is no systematic examination of the rest of the herd following the discovery of an infectious animal, and little attempt to bring home to the farmer the importance of the matter.

Dr. C. E. TANGYE (M.O.H., Wilts) stressed the importance of regular inspection and said his county council was moving in the direction of a whole-time veterinary inspector. Dr. STENHOUSE WILLIAMS was more optimistic as to the progress being made and suggested that too much must not be expected from the first seven months' operation of the Order. Lieut.-Colonel C. MADDOCK, M.D. (Secretary of the Grade A (tuberculin tested) Milk Producers' Association), described the progress that was being made in the production of this grade of milk and asserted that if herds had been freed of tubercle for a twelvemonth they could, with reasonable precautions, be kept free for many years.

Dr. R. KING BROWN (M.O.H., Bermondsey) described the propagandist methods adopted to promote the sale of this milk in Bermondsey—street corner lectures, distribution of pictorial pamphlets, &c., and mentioned that the borough council had decided to accept only this grade of milk for their hospitals and infant welfare centres.

Surg.-Admiral Sir PERCY BASSETT-SMITH gave an interesting presidential address to the "Services" Section on the relation of diseases of animals to those of man and made special reference to new developments with regard to undulant fever. In France and Spain there was a tendency for this disease to spread inland, and in France the infection was being spread by sheep. In Rhodesia, America, and Italy infection had been traced to cattle and an organism similar to *M. melitensis* had been found in bovines.

### *Rheumatism.*

Dr. A. P. THOMSON (Birmingham) read a paper on the rheumatic child, and Dr. CAREY COOMBS (Bristol) and Dr. M. B. RAY (London) and Dr. R. E. THOMAS (Bath) were amongst the chief contributors to a general discussion on this subject at the Pathological Section. Dr. C. PRESTON BALL (Dublin) dealt with the relation of oral sepsis to rheumatic diseases. Dr. COOMBS stated rheumatism was less frequent than 20 years ago and that there was strong evidence in favour of a causal streptococcus, which might be a normal inhabitant of the intestine converted from a saprophytic to a pathogenic type. Dr. RAY attached importance to diathesis and did not think the results of tonsil enucleation were conclusive. Dr. THOMAS mentioned that the nodules described by Dr. COATES as an early sign were rarely found before the age of 3. He had, however, found them once at the age of 14 months. Their incidence varied in the various schools of Bath and also as between one town and another. Any child with nodules should be kept under careful observation. An excess of carbohydrate in the diet might have a causal effect. From a preventive point of view, perhaps the most important point emerging from the papers and discussion was the need for effective education of both parents and school teachers in the very indefinite early signs of rheumatism, usually with no joint symptoms, so that the children may be treated before irreparable damage is done to the heart.

### *Racial Progress.*

On the second day the women's section discussed the improvement of the race.. The problem was attacked from different angles. Dr. INNES PEARCE urged the greater importance of environment and that parents can only provide the right soil for the seed by their own culture and development. Race culture therefore meant parent culture. One must get at the newly-married couples. It was too late to try to break the vicious circle after four or five children had been born. Centres might be used to some extent as family clubs. The present haphazard outlook towards conception and parenthood must be abolished.

Dr. LETITIA FAIRFIELD (P.H. Dept., L.C.C.) reviewed optimistically the present position, after the ten years' campaign against venereal diseases. More and more gonorrhœa in women was receiving adequate treatment. Formerly all sterility was attributed to the woman, but it was now known that at least 25 per cent. of it was due to the man. Syphilis was still the greatest known cause of premature still-births. A positive Wassermann in a newly-born child was often only a "carry-over" from the maternal blood, and did not imply congenital syphilis. Only a very small percentage of the London school-children showed evidence of congenital syphilis. Mental degeneration was very rare and when it did occur was followed by the well-known affections of the special senses. Apart from these rare cases there was no evidence that syphilis in the parents caused mental deficiency in the child. The cures and the continuity of attendance of the cases at the V.D. centres went on increasing and there was a decline in the deaths attributed to congenital syphilis.

Dr **STELLA CHURCHILL**, L.C C, spoke on the *feasibility of health certificates before marriage*, and mentioned that such certificates were being encouraged by the German Government

Mrs. C S **HODSON** (*Secretary, Eugenics Education Society*) mentioned that the work of the V D centres was dysgenic in that it helped the propagation of the immoral and incontinent *section of the* community She did not, when questioned, put before the meeting any practical proposals for scientific mating

Dr D S **DAVIES** (M O H, Bristol), who in an interesting paper read the previous day on Random Recollections of Forty Years' Service, had stressed the enormous importance of heredity and prophesied that race culture would be the task of the coming hygienist, said humanity could not help caring for its weaklings but that we ought to try to prevent the propagation of the unfit

The practical suggestions arising from the discussion were early teaching of the facts of life to boys and girls, and the education of both sexes for parenthood

### *Cancer*

Dr J G **ADAMI** (Vice-Chancellor, Univ of Liverp ), in opening a discussion on cancer at a joint meeting of the State Medicine and Pathology Sections, reviewed the present position and expressed the opinion that, without believing that in colloidal lead Prof Blair Bell had discovered the ideal substance for arresting cancer, a huge advance had been made. He believed *that from now onwards* medical research would chiefly concern itself over the provision of better and surer methods of arresting cancerous growths There were *many causes* of cancer, and the more hopeful line of attack appeared to be how to end cancer rather than finding out how it began He did *not believe that the campaign of education* would lead to cancer-phobia ' The same warning had been *thrown out when the campaign against* tuberculosis started and had proved ill *founded* He advised every medical man, to whom a patient came with a lump in the breast, &c *not to send them away with* comforting words, but to see them *again and keep* in touch with them, so that surgery, if needed, might be employed successfully

Commander O **LOCKER LAMPSON**, M P, speaking as a layman, made a stirring plea for a braver outlook. After three years in Russia, where death was disregarded, it was astonishing to return to this country and find all this fear of death After all it was better to die of cancer at 52 than from tuberculosis at 22 By getting rid of this fear we should get early operations with a large majority of cures Recent discoveries indicated remarkable progress. We must therefore with hopeful confidence, provide adequate support for research work.

Other interesting discussions were those on silicosis factory hygiene vocational selection, the care of the crippled child advance lines in maternity and child welfare, and the health of women industrial workers. The sections were well attended, interest being kept up to the finish, and the Congress fulfilled its purpose of directing public attention to every branch of health work

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A **YEAR BOOK OF LEARNED SOCIETIES**.—For the forty-second year in succession the *Year-Book of Scientific and Learned Societies* has been produced by Charles Griffin and Co, Ltd. of 12, Drury lane London W C 2 This book is a guide to the societies and Government institutions of Great Britain and Ireland and briefly records the work done in literature science and art during the session 1924 25. There are so many separate organisations that a reference work of this kind is essential and long experience has enabled this firm of publishers to provide just what is wanted. It is equally attractive to those who have a taste for the desultory acquirement of general knowledge and to those whose work involves hurried *reference* and thus it *fully justifies the claim to have* helped men to enjoy life or the better to endure it " The price is 15s, and the book contains over 100 clearly printed pages.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF ELECTRO THERAPEUTICS

A MEETING of this Section was held on May 21st, Dr **ALASTAIR MACGREGOR**, the President, occupying the chair

Dr H. **EATON STEWART** (*New Haven, U.S A.*) read a paper on

### *Diathermy in Pneumonia*

The earliest attempts, he said, to use diathermy in *pneumonia were made by two Americans*, F De Kraft and Byron S Price, of New York, about 1000 When Dr Stewart began to use it in 1921 he was unaware of this previous work. In that *year a severe epidemic of* the disease occurred in a New York marine hospital, to which he was consultant in physiotherapy, and on the assurance being given that it was reasonably safe, diathermy was allowed to be tried experimentally on a case in which there seemed to be no other chance of recovery The eleventh day of the illness had been reached, and the man's family had been informed that the case was hopeless He was given a through and through antero-posterior diathermy, with bare composition metal plates, 2000 milliampères, for 20 minutes; the clinical improvement was immediate and marked, and with applications twice daily he made an uninterrupted recovery In order to make the study of scientific value each case was observed, written up, and checked by the medical staff, X ray and laboratory reports being made by them, and no change being made from the usual medicinal, nursing, and dietetic care In the next 20 cases treated in this way there was only one fatality—in a patient who was moribund from the start During the rest of that season every third case was used as a control Forty-one cases were submitted to diathermy, and the death rate was 17 per cent , while 21 control cases, treated similarly *except for the diathermy*, gave a mortality of 48 per cent Publication of these results led to an extension of the treatment in both private and hospital practice in the States Miller, *of* Prague, seemed the only one who had treated a series in this way in Europe.

*Technique* —He used bare, flexible, metal electrodes, *covered with a heavy shaving-soap lather*, placed directly on the skin *antero-posteriorly* For single lobe treatment in the adult the area of the electrodes used was 5 by 7 *in* , *for two adjacent lobes*, 0 by 8 in. There had been a considerable use of German silver chain material, as such electrodes easily conformed to the chest contour In order to keep the plates warm it was well to have the *cords already inserted* in the d'Arsonval terminals and the electrodes prepared singly A folded bath towel could be *tucked underneath* to ensure good contact The upper plate was similarly prepared, placed in position, and was usually retained by the spread finger tips of the operator, who was then able to manipulate the *apparatus* with his free hand No weight must be placed on the anterior electrode Four minutes was the time occupied in raising the current to 1200 to 2000 *milliampères*, according to the requirement of the case

With regard to dosage, experience had shown the advantage *of giving longer treatments of a lower* milliampèrage—i e , instead of 20 minute applications at 2000 milliampères, 1200 to 1400 m.a for 30 to 40 minutes was preferred In very severe cases Dr Stewart had given 2100 m a for an hour at hourly intervals In private practice severe cases were treated every four hours, omitting early morning *application* It seemed to be advantageous to have the cardiac area included in the pathway of the current, as when treating a lower left lobe involvement; this *had been confirmed* by a number of workers

### *Clinical Results*

The clinical results *given* were *based* upon over 300 cases There had been a fall of the temperature by lysis in 07 per cent of the cases, in many this fall set in on the second or third *day* *In 1 per cent*, *in* which there was a deficient power of reaction in the patient, the application was followed by a sharp rise in temperature, then by a fall by lysis and a slowed pulse- and respiration-rate. This doubtless conserved the energy of the body. Another almost invariable result of the treatment had been a lessening of cyanosis when that was present, and this improvement was especially marked when the left lower lobe was involved. Probably it was because the relief from pain permitted of greater respiratory excursion, and also because there was a better intrapulmonic circulation around the area of consolidation. Under the treatment the respiratory rate was lessened by about five per minute, and in most of the cases the respiratory grunt disappeared permanently after the first treatment. The freedom from pain which the treatment conferred allowed the patient to marshal his powers of resistance and this seemed often to have been a determining factor in recovery. Sleep seemed to follow naturally quite early. Extension of the disease occurred under this treatment in about the same proportion of cases as when the treatment was not given. But since electrodes had been introduced sufficiently large to influence adjacent tissue, extension of the disease had occurred in fewer cases. Practically every application was followed by increased perspiration; when this was not too profuse it probably helped the elimination of toxins.

Empyema developed in about two-thirds the number of cases to be expected under other treatment.

Some writers contended that the heat developed in the patient's body by the diathermy was bactericidal, but Dr. Stewart thought that if this were so the disease would terminate as soon as the treatment was started; this did not occur. But the heat which was generated hastened resolution. When, in a few cases, resolution occurred quickly—too quickly—with signs of toxic absorption, the diathermy was at once stopped. It was necessary to speak very guardedly about mortality, for the death-rate from pneumonia varied widely in different epidemics. Dr. Stewart was able to say, however, that in four series of cases, checked by controls, the death-rate had been roughly halved by diathermy. The ascertained grand average death-rate to date was 12·9 per cent., including various seasonal epidemics, and embracing streptococcal pneumonia. No cases were refused the treatment, even if they were moribund. In 42 of the recovered cases the attendant physicians had abandoned hope. There were only two deaths in the whole series in which diathermy was applied before the third day. Favourable comments on the treatment had been made by 90 clinicians who had closely followed the progress of the cases. From every standpoint the treatment appeared to be safe and conservative, but Dr. Stewart studiously avoided the word "cure" in reference to the procedure.

### *Discussion.*

Dr. E. P. **CUMBERBATCH** said that when he went to the United States last autumn he made a point of asking each clinician he met there—both electrical and medical—what his experience of this treatment was. All thought very highly indeed of it, and he did not encounter anyone who doubted its efficacy. Dr. Stewart's book on the subject was a masterpiece of thoroughness.

Dr. W. J. **TURRELL** (Oxford) said that from considerations of logic many had felt for some time that diathermy ought to benefit pneumonia, but hospital physicians to whom the method was recommended showed great reluctance to adopt it. One physician to whom he spoke on the subject said he could understand that diathermy might help in some cases of pneumonia, but he did not see how it could help grey hepatisation of the lung. He told that gentleman that the condition was a post-mortem condition. In diathermy the slower one reached the maximum current to be employed the better it was for the patient, but he thought no one would have anticipated from theoretical considerations that 98 per cent. of the cases would terminate by lysis instead of by crisis. But what was lacking in this country was a portable apparatus, so that the electro-therapeutist could go to the homes of patients and give them the treatment there. He asked whether a portable apparatus was in use in America.

Dr. C. B. **HEALD** said he also could speak of the reluctance of hospital and other practitioners to adopt this treatment. He had treated by the method a case of acute lobar pneumonia, two of delayed resolution, and four of broncho-pneumonia. When his own baby, aged 3, was almost breathless with broncho-pneumonia, the respiration-rate being 52, he fearlessly used the treatment, feeling that it would bring quiet. The effect was remarkable, for long before any appreciable concentration of current was reached there was a definite change in the type of breathing. That had been very noticeable in all his cases which had been treated in this way. One of these was a doctor, aged 36, who had double pneumonia three weeks before diathermy was commenced, and he was sleeping badly and was breathless on exertion. There were few or no signs of resolution. Two heart-shaped electrodes, covered with lint, were used, and as soon as the current was turned on the patient said he felt comfortable, and after the first application he enjoyed a good night. 2000 m.a. caused restlessness, and this patient himself was able to say what strength of current suited him best.

Dr. G. B. **BATTEN** asked about the comparative values of the open and the closed spark-gap, the latter being the usual form in this country, whereas the United States practitioners seemed to prefer the open form. He also referred to the greatly increased permeability of tissue to current according to the strength used; Phillips, of Belgium, showed that tissue was eight times as permeable to a current of 200,000 as it was to one of half that strength. He did not agree with Dr. Stewart that if diathermy acted as a bactericidal agent it would cure at once; his own view was that it first greatly lowered the microbial activity, then became lethal to the organisms.

Dr. **STEWART**, in reply, said the profession in the States was fortunate in having several makes of portable instrument for the purpose, giving currents of 75, 110, and 220 volts. They were quite reliable. He averred that the profession in America also took up a conservative attitude in regard to anything new, and he had every respect for the physician who could say he had watched a certain kind of treatment and was not impressed by it, but not for one who objected to it when he had never seen it. He also had noticed there was a change in the type of respiration following the application of the current. In America triple gaps were largely used; some open, some closed, and, except for the noise, he did not think there was much to choose between them. He contended that the lowering of the temperature by lysis at an early stage must effect a great saving of the body resources, for heat was placed there without the body's aid. Among the 143 cases to which diathermy was applied before the third day of the illness, only one died. Good work was now being done at the Crile Clinic to show how electricity could be used to greatly reduce the surgical shock which followed major operations. A very important point about this treatment for pneumonia was its safety.

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**PURE MILK FOR LIVERPOOL HOSPITALS.**—The Liverpool Port Sanitary and Hospitals Committee is endeavouring to improve the quality of the milk-supply to the city hospitals. It reports that although the milk is the best that can be obtained in the district, it is not equal to that produced by the farms visited by the committee in Berkshire. The experience gained in visiting those farms showed that, without any costly buildings, cows can be maintained in thoroughly hygienic premises and their milk produced under extraordinarily clean conditions at very moderate expense. The whole of the milk consumed in the Liverpool hospitals comes from the great dairying district of Cheshire where, the committee thinks, there ought to be little difficulty in keeping tubercle-free cattle. If the Liverpool hospitals were supplied with Grade A Tuberculin-tested milk at present prices the extra cost would be about £1500 per annum.

# Reviews and Notices of Books.

## HEALTH LEGISLATION.

*Public Health Law.* By JAMES A. TOBEY, M.S., LL.B., Lecturer on Public Health Law, Massachusetts Institute of Technology, Yale School of Medicine, and Columbia University. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. Pp. 304. 20*s.*

THERE are very few actions taken by a public health official which may not be questioned in court of law. It behoves him, therefore, to walk circumspectly and to bear in mind the risks he is taking, yet not to lack the courage to take risks in case of need. For example, any removal of the environmental disabilities of the people has to be carried out strictly within the letter of the law, which also must be observed punctiliously when any restriction of the freedom of individuals in the health interests of the community has to be enforced. This means that the public health expert has to convince the majority of the people concerned before he can obtain power to apply compulsion to the individual, which is good for both the expert and the public. For these reasons we have a growing volume of literature on public health law, or sanitary law as it is unfortunately called in this country, ranging from the "cram" book for students to the formidable annotated reproduction of Acts of Parliament which gives lengthy and sometimes contradictory legal judgments on debatable points.

This book falls into a category intermediate between the two classes of publication mentioned, and though it deals primarily with American public health law, is of sufficient general interest to be worth study outside the United States. Mr. Tobey commences with a general discussion of public health in its legal aspects, going on to trace the development of American public health law from its sources in the common law inherited from England to the form into which it has been moulded in the various States within the framework of the American constitution. The sanitarian of this country must be impressed on reading the book with the similarity between American law and our own, in spite of the opportunities for divergence afforded by the constitution of the two countries. An interesting feature is the meagre space devoted to the legal problems arising out of the law of nuisances, drains, &c., which occupy so much space in most English manuals of sanitary law, and, on the other hand, the introduction of the subjects of mental and social hygiene. Modern health officers will agree, we think, with the author's view, which has also been frequently stressed by Dr. Charles V. Chapin, who writes a foreword to this book, that the "nuisance" is a greater nuisance to the health departments than it is to the public.

This volume will prove valuable and interesting to public health officials of all nationalities.

*Health Legislation.* For Students of the Health Services. By Lieut.-Col. F. HARVEY, R.A.M.C. (Ret.), M.R.C.S., L.R.C.P., D.P.H. London: H. K. Lewis and Co. 1926. Pp. 207–x. 8*s.* 6*d.*

Colonel Harvey, who has much experience both of the practice and the teaching of sanitary law, has written a tightly packed summary for the use of health visitors, school nurses, local government and sanitary inspectors, and other social workers. He brings together, in a handy form, a mass of Acts and regulations, and, for the benefit of prospective candidates, adds a few typical questions from recent examination papers. Although the author did not manage to insert a mention of the Dangerous Drugs Act of last August, and although his references to workmen's compensation will require correction in view of the consolidating Act passed before Christmas, the book contains the latest information and explains the Housing Act and the Public Health Act of 1925, and numerous important regulations issued by the Ministry of Health last year. A few minor criticisms may be offered. The table of abbreviations in a much abbreviated book might more conveniently be placed at the beginning than on p. 22. In discussing the departmental transfers of powers under the Ministry of Health Act, reference does not seem to be given to the partial transfer of lunacy and mental deficiency powers from the Home Office in May, 1920. The otherwise excellent historical introduction has an entry "1920. The 'Sir' Loin knighted by Henry VIII.," of which the significance is not made apparent; an entry might perhaps have been better made against the year 1662 to Petty's Observations upon the London Bills of Mortality, which gave us our first vital statistics. Doubtless, because of the vigorous compression which governs the book, an occasional sentence reads awkwardly. Thus it is stated on p. 19 that "Statutory Acts are Acts of Parliament which have received sanction of the Crown"—as though some Acts were perhaps non-statutory or did not receive the Royal Assent—and on p. 38 that "The Vaccination Acts, 1867 to 1898 and 1907, include a number of Orders and Regulations made under those Acts," when it is presumably meant that the Acts authorise the making of orders and regulations. These are trivial points, perhaps, and there is a remarkable fund of accurate information in this little book which both students and workers will find helpful.

## MEDICINE.

*A Text-book of the Practice of Medicine.* Second edition. By Various Authors. Edited by FREDERICK W. PRICE, M.D., F.R.S. Edin., Consulting Physician to the Royal Northern Hospital; Physician to the National Hospital for Diseases of the Heart. London: Oxford University Press. Pp. 1864. 35*s.*

IN this edition this popular text-book has been thoroughly revised and brought up to date. Slight alterations in classification have been made, and rickets is no longer classified under deficiency diseases, but under diseases of metabolism. Many articles have been added and others rewritten. Among the additions are articles dealing with the Schick test in diphtheria and the Dick test in scarlet fever and quinidine therapy. The last named gives a clear account of the indications, methods, and dangers of this form of treatment. Of the sections rewritten, that on diabetes mellitus and the treatment of diabetic coma is of outstanding excellence. As in the first edition, among the best sections in the book are those dealing with diseases of the central nervous system. Sections dealing with the mental sequelæ of encephalitis lethargica and paraphrenia have been added, and the accounts of epilepsy, aphasia, and defects of speech, hysteria, neurasthenia, and dystrophia myotonica have been rewritten. The part played by metabolic disorder in the ætiology of epilepsy receives special notice.

The book is well indexed and clearly written. With every advance it becomes more difficult to produce a book dealing with every section in medicine adequately and in sufficient detail to make it of use. The need for a second edition so soon after the publication of this text-book shows that the requirements of both practitioner and student have been met in its pages, and its further success would appear to be assured.

*Text-book of Differential Diagnosis of Internal Medicine.* By M. MATTHES, M.D., Professor of Medicine, University of Königsberg. Authorised translation of the fourth German edition by I. W. HELD, M.D., and M. H. GROSS, M.D., New York. London: J. and A. Churchill. 1925. Pp. 908. £2 2*s.*

THIS well-illustrated and beautifully-printed volume should appeal to those readers who, being unfamiliar with the German language, are still desirous of studying the German point of view on medical problems. Prof. Matthes's book is well written, full of interesting facts, and provided with references to quite recent German literature. The translators have done their work well and have added to certain sections, particularly those dealing with circulatory diseases, in such a manner as to increase the general utility of the volume. The book should be a welcome addition to many medical libraries.

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### APPLIED ENTOMOLOGY.

*Insects and Diseases of Man.* By CARROLL FOX, M.D., Lecturer on Medical Entomology, Hygienic Laboratory, Washington, D.C. London: H. K. Lewis and Co. 1926. With 92 figures. Pp. 349. 18*s*.

THE first part of this book gives an account, with diagrammatic drawings and diagnostic keys, of the insects and arachnids which are concerned with the spread of human disease; a few mammals such as rats are also included. Its purpose is to enable anyone to identify the practically important species and give them their proper names; accurate systematics are fundamental to modern parasitology, and this section should be useful. The second part deals with the diseases of man transmitted by insects and is less satisfactory; the ground too is already well covered. We notice that barium carbonate and squill are not mentioned under rat poisons.

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### CHININUM: SCRIPTIONES COLLECTÆ.

Bureau for Increasing the Use of Quinine. Amsterdam. Pp. 262.

THE preface states that the interest with which their first publication (1923) was received has induced the Bureau to publish this second similar collection of papers. It is inevitable that a volume devoted frankly to increasing the use of quinine should give first place, and most space, to malaria; for its treatment rests on quinine, and there is still a steady demand for quinine in its prophylaxis, individual and mass. The place of honour, and a memorial notice, is given to the late grand old man of malaria, Battista Grassi, of whom an excellent and characteristic portrait appears, and a facsimile MS. reproduction of his contribution on the results obtained in the antimalarial fight in consequence of the discovery of the malaria-carrying anopheles. Quinine, of course, has played a part in this fight. As to his own eight years' antimalarial campaign at Fiumicino, he was sure that every year it produced seven times more than it cost; and on the moral side there was no comparison to be made. Next, facing his own portrait, is Laveran's statement: "Malaria is one of the rare diseases against which we can oppose a truly specific remedy—cinchona." Sir Ronald Ross does not here plead for quinine. Opposite his portrait is his brief and cogent summary of the reality of malaria and its meaning in terms of humanity—it is "the principal and gigantic ally of barbarism"; nothing has proved "so inimical to civilisation as this disease." The work of the Malaria Commission of the League of Nations in various countries is recorded and illustrated in a series of papers, as is the like work against malaria in America and the Dutch East Indies. Other papers deal with various problems of malaria, its quinine therapy and its prevention. The risk of getting one's brains kicked out, by barking too close at the heels of error, is well known, so one must admire all the more Clayton Lane's critical consideration of the treatment of the malarias. Intrinsically it deserves the widest note. The adoption of these methods would save much discomfort to patients, and much quinine, and prevent some malaria. Adam, from Dakar, records a case of congenital malaria. The parasites were found in peripheral blood of the mother during labour, and in the umbilical cord blood, and peripheral blood of infant after birth. Certainly this volume contains much of interest and value for the student of malaria, although the evidence, experimental and epidemiological, for the failure of quinine to prevent malarial infection receives in it no other representation than the passing, self-guarding statements of some of the authors that such failure may, and does, occur at times, and that the drug also sometimes fails to cure. Finally, a further series of papers record apparent beneficial results of quinine therapy in a variety of ailments. Prof. Wenckebach contributes an interesting paper on quinine in diseases of the heart and circulation. He relates that once upon a time he had refused to prescribe quinine on the "scientific" grounds that it "really and finally" paralysed the heart. How thoroughly wrong he was was shown when there came to him a patient, "by chance, or possibly not by chance, a Dutchman," who claimed to have a means of getting rid of his own perpetual cardiac arrhythmia, and proved his claim by coming next day with a regular pulse, confessing that he brought this about by taking a gramme of quinine! With the professor one sees how fit it was that such a bearer of the quinine evangel should have been a Dutchman.

As another agent for increasing the use of quinine this volume could hardly be bettered.

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### HANDBUCH DER TROPENKRANKHEITEN.

Third edition. Edited by Dr. CARL MENSE, with the assistance of many authorities. Leipzig: Johann Ambrosius Barth. 1926. Vol. IV. Pp. 762. R.M.66.

THIS is a bulky volume which in its size and mass of contents rivals its three immediate predecessors. Written in the same exhaustive manner, illustrated with wealth of detail and ample references to the literature, the new edition of Mense cannot be regarded otherwise than as a book of reference. A section on cosmopolitan diseases of the tropics is contributed by Dr. P. Manteufel. Under this heading one might embrace almost the whole of medicine. He has selected for special mention typhoid, typhoid-like diseases, small-pox and its subvarieties, tuberculosis, venereal diseases, eye diseases, measles and scarlet fever, diphtheria, pneumonia, whooping-cough, influenza, mumps, and skin diseases. The list includes many other morbid conditions as well, and it cannot be said that in his efforts to deal exhaustively with this formidable subject the author has been entirely successful.

The information at the author's disposal has not been in all instances of equal value, and no particular advantage appears to be gained by splitting up typhoid-like diseases and the subvarieties of small-pox ad infinitum. Dr. R. Ruge has written a full account of bacillary dysentery; here again an uncritical attitude is observed in dealing with the innumerable variants of the dysentery organisms which have been described. The historical section, which is of little practical use to the modern student, appears to be unnecessarily laboured. Its writer is responsible also for the section on amœbic dysentery, to which the same criticisms might be applied; the text figures and plates illustrating the pathological appearances of the bowel are, however, excellent. Dr. Juliano Moreira, head of the State asylum of Rio de Janeiro, has written an original article on the psychoses and mental disorders of the tropics, under which are included as ætiological factors syphilis, malaria, sleeping sickness, Chaga's disease, yellow fever, leprosy, plague, encephalitis lethargica, beri-beri, and pellagra. Opium, alcohol, and hashish receive attention as the most potent of cerebral intoxicants in native races. Undoubtedly the best and most exhaustive account of verruga peruviana and Oroya fever that we have is the chapter by Dr. H. da Rocha-Lima; it is illustrated by photographs, temperature charts, and an excellent coloured plate of Barton's bodies in the latter disease. Dr. Georg Sticker writes upon the short fevers of the tropics; these suggest dengue and phlebotomus fever and Weil's disease, but the author ambitiously includes in his net such dubious entities as acclimatisation fever, low fever, and many local "fevers," which for the sake of clarity had better have been omitted. It seems illogical that hepatic amœbiasis and amœbic infection of other organs should form the subject of a separate chapter and not regarded in direct connexion with amœbic dysentery, from the account of which it is separated by a *bloc* of over 800 pages. This lack of coördination has led to needless reiterations and much waste of space. Dr. U. N. Brahmachari contributes a chapter on kala-azar; half the space devoted to this important disease is occupied by an exhaustive bibliography, while the section on treatment is mainly concerned with the results of recently elaborated antimony compounds. This section is particularly fully illustrated, especially by means of maps.

This stupendous work suffers from the great disparity in the value of the articles. Moreover, its very completeness tends to make it unwieldy. But the worker in tropical diseases, especially one who is remote from libraries, will find in this volume a complete exposition of the subject. The names of many English authorities in the bibliography are strangely misspelt.

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### INFANT WELFARE.

By H. H. CHODAK GREGORY, M.D., M.R.C.P., Assistant Physician, Royal Free Hospital; Physician, East London Hospital for Children, Shadwell. *London: H. K. Lewis. 1926. Pp. 141. 4s. 6d.*

THIS little book is primarily intended for practitioners who are engaged on work in infant clinics. The first chapter is directly concerned with the management and scope of the clinic, and the special problems which arise there are discussed. The rest of the book forms a guide to the feeding and management of infants which is equally applicable to the clinic and the home. The advice which is given on nursery hygiene in general is extremely practical and is clearly expressed. The author rather curiously champions the "dummy"—when used for a few minutes only—as a stimulus to sleep. It must certainly be admitted that no harm will arise from its use in this way alone, yet it may be that the French Government, in forbidding recently the sale of the "sucette," have adopted the more prudent course. The instructions on breast and artificial feeding are sound, and have the great merit of being simple. Recognition is given both to the advantage and the practicability of using fresh cow's milk when breast feeding is not possible. It will, perhaps, be helpful to some of the less advanced readers if in a future edition some tables of specimen feeds are included. The book deals in the main with the normal, but the last chapters contain an excellent summary of the significance of some common symptoms.

This is altogether an admirable book, which should be of great assistance to a much larger class than the medical officers for whom it is specially intended. It may be strongly recommended to nurses who are preparing for the examination for the Sick Children's Register, and it should make profitable reading for an intelligent mother.

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### U.S. MEDICAL DEPARTMENT AND THE WAR.

*The Medical Department of the United States Army in the World War.* Vol. XV. Statistics, Part II.: Medical and Casualty Statistics. *Washington:* Government Printing Office. 1925. Pp. 1308. $3.

THIS is a handsomely printed book of elaborate statistics, set out on large and expensive pages, and sold for 12s. It tells in great detail how the U.S. Army grew month by month, and how it was demobilised, what were the admissions for disease and injury, the discharges for disability, and the deaths in the various classes of soldiers, white, coloured, Filipino, &c., both absolutely and per thousand. Then there are statistics of the health of the individual training camps in the United States, and tables, never before attempted, showing for each day in 1918 up to the armistice how many of each infantry, artillery, machine-gun, and engineer unit were gassed, wounded, or killed in action day by day. A diagram on p. 1020 shows the case mortality of those wounded by each form of enemy action, and the highest case mortality is that from sword wounds. Lest this unduly encourages some devotee of the *arme blanche*, we hasten to add that only 12 of such wounds are reported, of whom 8 died, while of 235 bayonet wounds only 4 died. Of gunshot wounds there were 7474 deaths among 74,883 wounded. There is required some universal notation to show in such diagrams which figures have weight behind them, which have not. In all there were 36,694 (3·6 per cent. of the army) killed in action, 224,089 (21·8 per cent.) wounded, of whom 13,691 (1·3 per cent. of the army) died. Nearly half the infantry became casualties in action. It is interesting to note that admissions for drug addiction increased relatively to those for alcoholism among white soldiers in the United States up to the armistice, and then at once fell off. It is not clear how many men of the Expeditionary Force in Europe died, of what diseases, or what proportion the deaths from disease bore to the deaths from wounds, but in other respects the statistical information offered on the diseases and casualties of the war is of great interest.

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### CLINICAL NOTES AND DEDUCTIONS.

Being Fads and Fancies of a General Practitioner. By MARY C. DE GARIS, M.D., B.S. Melb. *London: Baillière, Tindall and Cox. 1926. Pp. 176. 7s. 6d.*

Miss de Garis has evidently given much thought, born of experience, to her subjects. She devotes the first 40 pages to the subject of labour. Labour ought to be practically painless, she holds, and the frequent occurrence of pain is due to primary inertia; this again is thought to be due to certain constitutional factors—e.g., endocrine deficiency and especially dental sepsis and dietetic errors. No very satisfactory facts are adduced to support these hypotheses, but the desirability of more exact obstetrical research is thereby emphasised and advocated. Dental sepsis figures prominently and is given a section by itself, and cases are quoted to show the effects of it in arthritis, psychoses, and renal and cardiac troubles. Shorter articles follow on whooping-cough, malaria, and diphtheria, on isolated cases, and on medical subjects. The book ends with a pleasantly written description of a Scottish women's hospital in Macedonia.

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## JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXIX., No. 2. April, 1926. Pp. 141–221.—*The Occurrence of Brucella abortus and Mycobacterium tuberculosis in Cows' Milk*, by G. S. Wilson and M. M. Nutt (Manchester). Samples of Manchester milk contain *B. abortus* in 8 per cent. and tubercle bacilli in 18 per cent.—*On Bacterial Variation with Special Reference to the Alleged Convergent Phenomena Exhibited by Certain Distinct Pathogenic Species (B. typhosus and B. enteritidis Gaertner)*, by A. N. Goyle (London). A thorough study of the serological relationships of the various forms of typhoid and Gaertner bacilli which, in some respects, show a curious overlapping.—*A Reticle of Endothelial Cells in the Thyroid and Parathyroid*, by G. S. Williamson and I. H. Pearse (London). The endothelial system of the thyroid contains many large granular cells resembling tissue mast cells; their abundance and cytoplasmic structure vary with states of functional activity.—*Heterologous Cancer Grafts*, by J. Gheorghiu (Brussels and London). Mouse cancers will grow for a while in new-born rats and may be so propagated for as many as 20 passages extending over more than a year. But the tumours never lose their species-specific character nor will they grow in adult rats.—*The Influence of Thyroid Feeding on the Islets of Langerhans in the Guinea-pig*, by G. R. Cameron (Melbourne). Causes hypertrophy of pancreas and a more than proportional increase of islet tissue.—*An Epidemic*

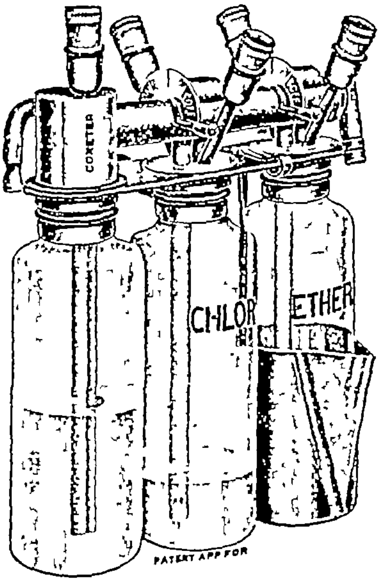
Affecting Stock Rabbits, by G. R. Cameron and F. E. Williams (Melbourne). An epidemic of suppurative lesions about the head and neck due to an organism similar or identical to those described by Schmorl and Beattie.—Arthritic Muscular Atrophy: the Oxygen Consumption of Atrophied Muscles, by A. E. B. Harding (London). Muscles wasted in sequence to an experimental arthritis use more oxygen than normal muscles and more than muscles wasted from simple disuse.—"Calcification" in the Rabbit's Brain, by C. Da Fano and J. R. Perdrau (London). In two animals inoculated with encephalitic material changes were found similar to those known in human brains as "calcification," though the abnormal deposit seems to be mostly composed of iron salts.—The Four Human Blood Groups, with Special Reference to their Agglutination Titres and to Abnormal Donors, by A. R. Jones and E. E. Glynn (Liverpool). A careful quantitative study of iso-agglutinins in 40 persons. Titres vary widely and need consideration in transfusion; thus the serum of a "universal donor" may agglutinate so strongly as to cause trouble when it is diluted in the circulation of the recipient. Seven examples of abnormal agglutination were found.—Bacterial Contamination of Commercial Peptone, by H. D. Wright (London). Some examples of peptone contain so many dead bacteria that they may be easily found microscopically in broths made with them.

JOURNAL OF INDUSTRIAL HYGIENE, March, 1926.—R. J. DeMotte, speaking from his experience, maintains the thesis that antiseptics should have little to do with the treatment of accidental wounds which are disinfected by Nature's own antiseptics, the blood and serum. Rational treatment should consist in helping nature with mechanical measures which are outlined.—The chief contribution in this number deals with lead poisoning among oxyacetylene welders employed in scrapping naval vessels. The trouble is one which has arisen also in this country. Detailed statistics are given which exhibit for an average personnel of 73 men an average of 253 working days lost per month as a result of plumbism; the shortest period of exposure was seven days and the longest 2·4 months, but the men for the most part were newly employed at this work. Hence, symptoms of chronic lead poisoning were not to be expected. Clinical findings are quoted of which the absence of hypertension is the main point worth recording. The poison was absorbed by breathing lead fumes generated when the hot flame was brought to bear on old paint on the ships' plates. Preventive measures are particularly difficult to install.——April, 1926.—A statistical study of occupational diseases reported in the State of Ohio is given by E. R. Hayhurst and D. J. Kindel. It is concerned with 3226 cases notified by doctors under legal obligation during five years ending June 30th, 1925. The list, which includes all eligible for compensation diseases, and some others, is far wider than that of our Factory Act. Dermatoses account for 2264 cases, lead poisoning for 431, and benzol and its derivatives for 55. The rubber industry is responsible for nearly all the dermatoses which are separately tabulated by the process concerned. The lead poisoning cases also are separately tabulated; the manufacture of storage batteries accounts for 145 cases, painting motor-cars for 114, and the manufacture of white lead for 54. Information is given as to the age-distribution of these cases. The authors note that an increase has taken place both in the number and range of occupational diseases, and conclude that one of the most profitable investments in the entire industrial field is the control of industrial health.—L. T. Fairhall considers the estimation of zinc in organic matter, and points out how quantities of zinc ranging in amount from 0·002 mg. to 50 mg. can be satisfactorily estimated within 5 per cent. of the amount actually present.—R. T. Lutz reviews the literature of the occurrence of zinc in tissues and presents a study of its normal distribution in the rat, cat, and man. He considers that traces of zinc in animal tissues are normal and universal, since this metal was found present in every sample analysed. He puts forward as a probable hypothesis that, in any given tissue of an animal species, there is a definite normal concentration of zinc which is constant within a small range. This article contains much detailed information given in tabular form.

# New Inventions.

## AN IMPROVED ANÆSTHETIC APPARATUS.

THE accompanying illustration depicts the latest improvements in this machine. The water sight feed for mixing the $N_2O$ and O of the new set of triple bottles is substantially the same as it has always been, but the mounts for the ether and chloroform bottles are worked on a different and, I think, an improved principle. They are called the "1926 type," and are also made with twin bottles where one is not required for chloroform. In place of the two levers of the older type, one for "on" and "off" and the other for the degree of saturation required, I now have one lever only which, when moved over a semi-circular scale, causes the gases to go either through a by-pass or partly through the by-pass and partly into the anæsthetic, or entirely through the anæsthetic as required. By setting the lever to such a position that only a fraction of the gases bubble out of a small hole drilled near the bottom of the long tube in the anæsthetic bottle, a very lean mixture is obtainable, and on the other hand, even with a full flow and a high pressure, leakage is negligible. This new arrangement of levers enables one to regulate the amount of ether or chloroform with far greater accuracy than was possible formerly. For those who want to use a large quantity of ether, there is provided a hot-water cup to enclose the ether bottle as a precaution against freezing. The lamp to prevent the gas from freezing, which was always a source of danger, has been omitted. This has been rendered possible because the makers now provide non-freezing gas, but in any case I find that a small hot-water bottle placed on the side of the reducing valve of the gas bottle prevents freezing and enables one to get a steady flow of $N_2O$.



I have to acknowledge my great indebtedness to Mr. Wellesley, of Coxeter and Son, Ltd., for producing such an excellent method of controlling the small amount of ether or chloroform that is used.

H. EDMUND G. BOYLE, O.B.E., M.R.C.S. Eng.

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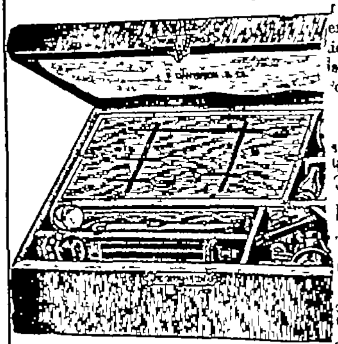

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functorily applied than if it is carried out as thoroughly as such things can be done on the large scale. That the later doctrine has its disciples in Germany is indicated by a recent article[1] by Dr. W. RIMPAU, director of the Bacteriological Institute in Munich, who quotes CHAPIN with approval, while he advocates instruction of school-children in the objects and methods of concurrent disinfection of articles soiled by the infective patient. The public health officer in this country must, of course, anticipate opposition from the people to any departure from a measure on which they have been taught by his predecessors to place reliance. When an outbreak of infectious disease occurs in connexion, for instance, with a school, drains and disinfection are the first things that occur to the minds not only of the parents but even of the teachers. The unorthodox official must take the risk that an epidemic, for some imperfectly understood reason, may follow the inception of his new policy and the coincidence be mistaken for effect. Nevertheless, it is imperative to educate a public which is not likely to accept the modern method of preventing diphtheria and scarlet fever by active immunisation so long as it is allowed to believe that spraying and fumigation of schools and the liberal use of disinfectants at home are a real safeguard against casual infection. Their enlightenment is a function not of the health officer but of the whole medical profession.

It should be our concern, however, to watch that the pendulum is not allowed to swing too far in the opposite direction. Prof. RIMPAU suggests that the established value of certain means of disinfection under specific conditions should be brought even more prominently before the people than is done at present. To this end we commend to practitioners Prof. H. R. KENWOOD'S article in our present issue (p. 1055). He is a firm believer in the value of disinfection scientifically applied, and his laboratory and field experiments enable him to speak with authority on the relative potency of various disinfectants as well as the conditions most favourable to their action. The present revision of ideas among health officers is reflected, too, in a tendency to question the advantage of wholesale hospital isolation for scarlet fever which may lead to an increase in the home treatment of these diseases. Under such conditions, it is agreed that assiduous concurrent disinfection, however simple in character, is required. The information conveyed in Prof. KENWOOD'S paper should be of real value for this purpose. Finally, it should be made quite clear that the failure of disinfection to stop the spread of air-borne infections does not belittle the part it has taken in the suppression of the diseases communicated by the alimentary route or by inoculation. Just at the moment when fumigation is regarded by most sanitarians as the form of disinfection which can most safely be discarded, its use is being extended for the destruction of vermin, especially on board vessels. It is our strongest weapon against the rat and the flea, and its importance is commensurate with the world prevalence of plague. The port sanitary officer who has to deal rapidly with the holds and crews' quarters of vessels infested with all sorts of parasites retains his respect for fumigation. As in other applications of science, it is only the blind routine of its use on a large scale which has brought discredit on a measure which is of immense value when used at the right time, in the right place, and in relation to the medium of infection to which it is properly applicable.

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[1] Münchener Medizinische Wochenschrift, March 5th, 1926.

## THE PRECANCEROUS STATE.

THE precancerous state has recently received a good deal of attention. It has been the subject of a discussion in the Section of Surgery of the Royal Society of Medicine.[1] Sir LENTHAL CHEATLE, who for many years made this problem, as applied to the breast, his special study, has published another paper on it under the title Desquamative and Dysgenetic Epithelial Hyperplasias in the Breast.[2] Prof. HORST OERTEL, of Montreal, has discussed it in an address on Involutionary Changes in Prostate and Female Breast in Relation to Cancer Development.[3]

The difficulty of the problem begins with the definition. Dr. J. H. SEQUEIRA, who opened the discussion at the Royal Society of Medicine, began with the statement: "I find it a little difficult to define exactly what is a 'precancerous' condition, although I think we are all aware of what is generally understood by that term." CHEATLE expresses himself in equally diplomatic terms. In describing a certain form of what he terms "dysgenetic epithelial hyperplasias," he states that it is histologically more nearly connected with a condition of early carcinoma than any other pathological process in the breast and that it, therefore, represents the "precancerous" condition. But, he adds, "I would lay it down as a law that there is no kind of epithelial hyperplasia that will inevitably end in carcinoma." His views on this subject demand special respect because they are based on a study of sections of the whole breast. In this way he has been able to collect unique material and to observe the earliest hyperplastic changes, occurring sometimes only in a single duct. He correlates the various changes in a sequence of events which begins with what he terms a desquamative epithelial hyperplasia. The next change is a condition of dysgenetic epithelial hyperplasia in which the epithelial cells retain their normal structure. In that stage they frequently produce papillomata confined within the acini and terminal duct. This stage is followed by the precancerous state in which the individual cells show signs of beginning malignancy—nuclear hyperchromatosis, variation in size of cells and mitoses. In this state the hyperplastic changes are still confined within the ducts and terminal acini. When it extends beyond these and invades the surrounding connective tissue the development of carcinoma has been reached. Sometimes the precancerous state may be seen in the centre of a fully developed carcinoma. CHEATLE points out that these various hyperplastic changes find a complete parallel in the changes seen in the skin of mice subjected to tar painting. These contentions are illustrated by numerous clear figures accompanying the paper. OERTEL, on the other hand, looks upon these hyperplastic changes, which he has studied in breast and prostate, as regressive changes accompanying the physiological involution of these organs. Morphologically they may give the appearance of malignant new growths so completely that he has frequently diagnosed them in the past as "early cancer" or at least as "suspicious of early cancer." But the frequency with which such conditions occur in the two organs during the regressive periods of life leads him now to believe that they are only potentially cancerous and require yet an additional factor to elicit malignancy. Following BORST, he prefers the term "carcinoid" to the term "precancerous." His statement of the great frequency with which such hyperplastic changes occur in the senile prostate finds confirmation in a recent paper by NELLER and NEUBÜRGER[4] who discovered them in approximately every fourth senile prostate.

The problem of the precancerous state is obviously intimately bound up with that of the ætiology of cancer. The search for a precancerous state follows naturally from the conception of cancer as a biological cellular change. If cancer is the expression of some change in the internal structure or metabolism of the cell, it is most probable that such a change would set in gradually as the result of a slow process occurring in the cell. This preparatory stage would then represent the precancerous state. But if we accept GYE's conception and look upon cancer as resulting from the entrance of a virus into a cell, then these hyperplastic conditions would merely represent one of possibly many conditions which predisposes a cell for the attack by the virus. If the virus is not present they will never develop into cancer. On the other hand, it is conceivable on this view that cancer may arise without being preceded by any of these hyperplastic changes. The problem of the precancerous state is of more than academic interest, since the question naturally arises whether the presence of a precancerous condition does or does not call for operative removal. The possibility emphasised by OERTEL that the histological picture of a precancerous or carcinoid condition may be mistaken for an early carcinoma must be taken into consideration as a possible fallacy when claims are made of a cure of an early cancer. The final solution of the problem of what constitutes a precancerous state will have to wait upon further advance in our knowledge of the ætiology of cancer.

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## "B. C. G."

IN one of a series of American public addresses printed in our present issue, Sir ARTHUR NEWSHOLME considers the age-incidence of mortality from tuberculosis and shows that the risk of the acute form of the disease is greatest in the first two or three years of life. Hence arises the supreme importance of protecting young children from infection. Prof. A. CALMETTE has made a bid to protect these children by inoculating them, before infection can occur, with an attenuated living tubercle virus, and Dr. J. G. ADAMI, in an address, which also appears in this issue, describes CALMETTE's work as a magnificent advance, important for the prevention of both human and bovine tuberculosis. We have already referred[5] to the technique of this prophylactic vaccination, the results of which are now assembled in a monograph appearing in the February number of the *Annales de l'Institut Pasteur* and in the *Revue de la Tuberculose* of the same month. As long ago as 1909 CALMETTE described a strain of tubercle bacillus grown on glycerinated ox bile and now known shortly as B.C.G. (Bacille Calmette-Guérin). The microbiological properties of this strain have nowhere been set out exactly, but it is presumed that CALMETTE and GUÉRIN have used throughout the virulent bovine strain designated *lait de Nocard*.[6] B.C.G. was subcultured 230 times up to January, 1921, the date at which the vaccination experiments were started. It was then incapable of producing tubercles, either by intravenous, intraperitoneal, or subcutaneous inoculation or even by ingestion. The cultures resembled those of glanders in appearance, and massive infection in calves caused a general disease resembling typhoid fever which cleared up spontaneously after 15–20 days of fever without producing the slightest tubercle formation, as proved by subsequent autopsy of the animals.[7] In preparing the vaccine, B C.G is now cultivated on potato and glycerinated veal broth, or on Sauton's asparagin medium The cultures should not be more than ten days old, or, the authors state, they will contain too many dead bacilli. The vaccine is administered in milk at body temperature in three doses and is harmless, giving rise to no digestive trouble or malaise even in new born infants It can be obtained ready for use from the Pasteur Institute in Paris.

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[1] Proc. Roy. Soc. of Med., Sec. Surgery, November 4th, 1925.

[2] Brit. Jour. Surg., 1926, xiii., 509.

[3] Canadian Med. Assoc. Jour., 1926, p. 237.

[4] Münchener Med. Woch., Jan. 8th, 1926.

[5] THE LANCET, 1925, i., 1352 and 1303.

[6] Annales de l'Institut Pasteur, 1924, xxxviii., 371.

B C G vaccine has been tested by Calmette and his co workers on an extensive scale in rabbits and guinea pigs, a partial immunity being obtained lasting for six months. In calves the vaccination was found to be successful only in animals under the age of 15 days, prophylaxis was obtained by a single injection of 50–100 million organisms and was found to last for about 12 months. The number of calves thus immunised up to the end of 1925 was 3051, and the authors state that the growth of these animals has been satisfactory and that no harmful results followed the vaccination. Experiments on higher apes made by Wilbert in 1923 and 1924 suggested that B C G vaccine affords protection at all ages against infection from cohabitation with animals experimentally infected with tubercle. Wilbert[8] who conducted these experiments on behalf of Calmette, tested 15 chimpanzees and 59 other apes. In the case of the former three were vaccinated with B C G, five were infected with virulent cultures, and seven were retained as controls. These experiments were started in February, 1924 The five infected animals died quickly from tuberculosis as did also four of the controls, the remaining three controls succumbing to an accidental infection of bacillary dysentery The three vaccinated chimpanzees were alive and well in June, 1925. Of the 59 other apes 19 were vaccinated with B C G, 20 were infected with virulent cultures of tubercle bacillus, and 20 retained as controls. Among the 19 vaccinated animals (between September, 1923, and February, 1924) 6 remained alive and well in June, 1925, the other 13 having apparently died of accidental infections and trauma Of the 20 infected animals 19 died meanwhile of tuberculosis, whilst of the 20 controls a similar number also succumbed to tuberculosis.

In 1921 Calmette and his co workers proceeded to vaccinate new born infants by this method, and up to the end of 1925 had treated 1317 infants. The results are divided into two groups: (1) 564 cases (of which 231 had been in contact with tuberculous cases) under observation for 12–18 months, of whom only two are known to have died of tuberculosis and 43 of other diseases, (2) 753 cases (of which 355 had been in contact with tuberculous cases) under observation for 6–12 months, of whom 9 are known to have died of tuberculosis and 53 of other diseases. It would have been easier for others to assess the value of these figures if they had been returned as numbers of children alive or dead at three separate age periods—e g, 6 12, and 18 months. The age at death of the 11 infants (taking the two groups together) who died of tuberculosis, was under 6 months in all cases but one The figures, therefore, show that of 1317 cases vaccinated 10 had died of tuberculosis by the end of the first six months. It would be unwise to draw further deductions since there is, obviously, a difference of six months between the youngest and oldest infant in each of these two groups. The infants vaccinated have been kept under observation, and where their environment proved to be unsatisfactory they have been boarded out, but the statistics given do not show the proportion of children thus removed from their homes This omission makes it difficult to compare the figures with those for an ordinary infant population. There is a further difficulty in that the death rate from tuberculosis in infants in the normal population of France is not given, although Calmette states that in the case of infants born of tuberculous parents and placed with healthy foster-mothers shortly after birth the mortality from tuberculosis is approximately 7 per cent. in the first year Finally, this method of prophylactic vaccination has been applied to 3352 infants and 931 adults among the endogenous population of French colonies. It is evident that Calmette and his co workers have carried out an important and extensive sociological experiment on bacteriological lines, of which the ultimate results will be awaited with much interest. At the present moment the data are too vague and lacking in controls and the period of the experiment too short for anything like a final judgment.

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[7] Tubercle Bacillus Infection and Tuberculosis in Man and Animals By A Calmette English edition by W B. Soper and G. H Smith. Baltimore 1923 Pp 654.

[8] Wilbert J Annales de l'Institut Pasteur, 1925, xxxix, 641

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## PROTECTION FROM THE PHOTOGRAPHER

On Tuesday next, June 1st, there will come into operation a beneficent enactment whereby medical practitioners who are called upon to give evidence in *causes célèbres* will be protected from the risk of a form of publicity which they sometimes encounter but seldom enjoy The new law makes it an offence, punishable summarily by fine not exceeding £50, to photograph in any court any person who is either a judge or a juror or a witness or one of the parties in the case Sketching or any other kind of portraiture attempted in court with a view to publication is similarly prohibited, as is also the actual publication of any such photograph taken or sketch made in contravention of the new interdict. Although these provisions occur in a statute called the Criminal Justice Act (which otherwise deals mainly with criminal procedure at assizes and quarter sessions and before the magistrates), they extend to all sorts of courts, civil as well as criminal. "Court" means any court of justice and includes a coroner's court; "judge" includes a coroner Finally, photographing or sketching is deemed to occur in court if it takes place within the precincts of the court buildings or if the victim is photographed while entering or leaving the court room or the precincts of the building The new provision will not, of course, prevent the publication of studio portraits of medical practitioners who happen to be witnesses in some case which attracts public attention. The battery of press photographers, however, often to be seen outside a court house on the morning of some sensational trial will have its guns spiked—unless, indeed, it is still permitted to photograph barristers and solicitors to whom Parliament does not seem to have given the same measure of protection

**Alexandra Day.**—The date of Alexandra Day has been postponed from June 9th to June 30th. The organising committee is in urgent need of assistance and would welcome helpers in depôts, rose sellers and the loan of motor cars on June 28th, 29th, and 30th. Money collected on Alexandra Day is distributed amongst hospitals and charities for the sick. Anyone who will help should write to Miss C. M Beeman, 33, The Grove, The Boltons, London, S W 10

# Annotations.

"Ne quid nimis."

## MUNICIPAL CONSULTING OBSTETRICIANS.

THE Metropolitan Borough of Hampstead recently invited applications for the new posts of consulting obstetrician, several of whom are to be appointed as the outcome of a recommendation by a special medical subcommittee. The infantile mortality-rate of the borough is already low—56 per 1000 births in 1924; the maternal death-rate has been reduced to about 3 per 1000 births, the general death-rate being 11 per 1000 of the population. Still further reduction in maternal and infantile death-rate is, however, aimed at, and to this end a subcommittee, consisting of three medical members of the Maternity and Child Welfare Committee, with a lay chairman, was appointed in 1923, the reference being the investigation of the deaths of infants under 2 years of age, of still-births, and of maternal deaths. A comprehensive inquiry was made into the circumstances of 83 infantile deaths, 3 maternal deaths, and 26 still-births notified in 1924; in his annual report for that year Dr. F. E. Scrase, the medical officer of health, notes how friendly and helpful were the replies of local practitioners to a circular letter inviting opinions as to the causes of the still-births occurring in their practice, and suggestions as to the prevention of these in the future. The most important recommendation of the medical subcommittee which sifted the evidence obtained was that in difficult cases the services of a skilled obstetrician should be available to supplement those of the practitioner, and this recommendation is now being carried into effect. Five experts have now been appointed in the persons of Miss M. Basden, Mr. A. O. Gray, Mr. C. S. Lane-Roberts, Dr. S. G. Luker, Mr. L. C. Rivett. They are not to be called in by midwives direct, but are to be at the disposal of practitioners in cases of grave difficulty. Their guaranteed fee of five guineas per case will not vary whatever the services rendered; this fee is recoverable in whole or in part from the patient at the discretion of the borough council. It is anticipated that beds may be available, but in this respect the scheme has yet to be elaborated. We congratulate the borough of Hampstead on a wise endeavour to attack the problem from both ends, since pari passu with this emergency organisation antenatal vigilance is to be still further pursued. Many of Dr. Scrase's colleagues assume that the elaboration of facilities for examination of prospective mothers is all that is needed to prevent difficult or at any rate disastrous labours. Of recent years the value of preventive measures such as antenatal examination has, perhaps, been overstressed, for the methods available for estimating in advance the relative sizes of the full-term child and of the pelvis are still far from perfect. However carefully the patients' histories and measurements may have been taken, a certain proportion will surprise the midwife at the time of labour and perplex if not alarm the doctor summoned to her help. It is in these cases where skilled manipulation by one who is constantly dealing with similar emergencies may save the mother at least from severe laceration and the child from probable death. The very fact that an expert may be summoned at need will give the practitioner confidence, and the success of the experiment will certainly not be measurable by the number of times that the consultants are called in. It seems to us likely that other local authorities will find it expedient to follow the example set by Hampstead in this matter.

## PSYCHOTHERAPY IN UROLOGY.

IN a recent number of the *Medizinische Klinik* (Jan. 9th, 1926) Dr. J. J. Stutzin puts forward an interesting point of view in his article on Psychotherapy in Urology. Monumental work has been done in the past forty years in various branches of science, and corresponding advances in the treatment of disease have followed, but a doubt has come to Dr. Stutzin as to whether, in the general striving after perfection of methods and technique, the personality of the patient is not being neglected. Beginning with a short disquisition on our present knowledge of the sympathetic and parasympathetic nervous systems, he points out that they are very much bound up with the mental state of the individual, and that the emotions, therefore, have a direct bearing on the tone and action of the viscera, which are controlled by the so-called vegetative centres. Again, there is a constant play of reflexes between the voluntary and involuntary systems, as witnessed by the rigidity of the abdominal muscles, which may be caused by an inflamed intestine, and the cardiac palpitation brought on by fright. Even before this was fully understood various attempts, more or less empirical, were made to treat disease by psychotherapy. The writer divides these methods into two groups: "diversion," including suggestion, auto-suggestion and hypnotism, and "disinfection"—namely, psycho-analysis. Of these, he considers psycho-analysis unproductive as compared with the time it takes, and hypnotism unjustifiable in view of the inroads it makes on the individuality of the patient. He confines himself, then, to suggestion. Passing on to the special subject of urology, Dr. Stutzin points out that no single organ or system of organs can be considered apart from the rest of the individual. For the sake of convenience a specialty may be created, but this is hardly a biological one. The urinary tract, being so closely associated with the generative system, is peculiarly liable to be affected by emotional disturbances. The urologist is primarily a craftsman; his pre-occupation is mainly surgical, and, although he may keep an open mind on speculative questions, yet his line of treatment is always practical. It is not suggested that the treatment of organic lesions may be neglected. The first thing to be decided is whether such a condition exists and, if so, whether it can be held responsible for the whole symptom-complex, or whether some psychic influence is at work as well. If no material cause is detected we are faced with the question: Can the clinical picture be fully explained by an emotional cause, or must there be some yet undiagnosed organic basis? This is where the fully-trained doctor, who is able to recognise a pathological condition, has the advantage over the lay practitioner of suggestion, who may perhaps bring a well-arranged scheme of treatment by suggestion and a thoughtful personality to bear on some disease which has no chance of alleviation by such means. Recent work tends to show that, although the secretory system is not under the control of the voluntary centres, it can be subjected to direct influences. Heilig, of Vienna, has proved in a long series of cases that, in the hypnotic state, painful sensations cause polyuria, and pleasurable ones oliguria; and, as the result of these and other observations, sundry operations on the nerves of the renal hilum have been devised. The operators, however, are apt to forget that the sympathetic system is far too complicated and delicate a structure to be coerced in this way, and the results, though they may be good at the time, are apt to be bitterly disappointing to the patient in the long run. A similar experience is that of Glaser, of Berlin, who reports cases of bronchial asthma, intractable after phrenicotomy, which have yielded to suggestive treatment. Dr. Stutzin cites various cases in which alarming symptoms, such as severe renal hæmorrhage and renal colic, were proved by exhaustive examination to have been brought on by mental states, analogous to the way in which certain fakirs can by the exercise of will power prevent or cause the escape of blood from a wound.

Furthermore, these cases have been cured by treatment of the mental state. The bladder, the ultimate nature of whose nervous mechanism and musculature has not yet been worked out, is very greatly affected by the emotions, as witness its irritability under the stress of nervous conditions; a clinical manifestation of this irritability is nocturnal enuresis. Dr. Stutzin does not make any exaggerated claims for his methods, but rather puts forward a plea for a broad outlook in diagnosis and treatment.

## INSURANCE OF PROPERTY AND CIVIL DISTURBANCE.

THE cars of many of our readers are insured through the Medical Insurance Agency under the Doctors' Special H.P. Motor Policy (Lloyds). In Section 2 of this policy, under the heading Accidental Damage, it is stated that the underwriters shall not be liable for wear and tear, or depreciation or mechanical breakdown, but shall indemnify the insured in respect of damage caused by collision with any other object, resulting from wear and tear or mechanical breakdown, and shall also indemnify the insured in respect of external damage to the insured car wilfully caused by employees during elections or during riots or civil commotions. It was stated by the Medical Insurance Agency, in a letter which we published last week, that this policy covers any damage that may be done to the holder's car during any civil disturbance, including such acts on the part of strikers as removal of carburettor, slashing of tyres, puncture of petrol tank, &c., or damage caused by stones thrown at car. It is not necessary to procure these benefits that the car shall be labelled "Doctor's Car," though where a car is being used only for professional purposes such a label would seem advisable. If a car is not used for its normal purpose the policy will be invalidated unless previous notice has been given and the assent of the underwriters obtained. For example, a private car is not normally used for the conveyance mainly of foodstuffs, but a four-seater car could carry four passengers even though they be not personally known to the owner and the policy would remain in full force. Damage to springs due to overloading is not covered under the policy whatever the cause of the overloading may be. The Medical Insurance Agency also informs us that the holders of the "Comprehensive" Household Policies of the type issued through the Agency are covered for damage by riots and civil commotions. This is not necessarily true of holders of fire and burglary policies or "combined" household policies.

## FROIN'S SYNDROME.

IN 1903 Froin described a group of signs in the cerebro-spinal fluid which has come to be known as Froin's syndrome; the signs were yellow colour, massive coagulation of the fluid in the tube or even in the needle, and the presence of a large number of cells. This group of changes has excited much interest among clinical neuropathologists, and many of them have desired to modify it in some way; thus, the combination of yellow colour and massive coagulation, regardless of the number of cells, often goes by Froin's name, and Greenfield and Carmichael[1] wish to apply the term syndrome of Froin to fluids which contain 0·5 per cent. or more of protein, whether spontaneous coagulation occurs or not, and whether the fluid is xanthochromic or not. The diseases with which the syndrome is associated are, except in rare instances, conditions involving spinal compression, and when the complete syndrome has been found the compression has usually been due to syphilitic pachymeningitis. The current number of *Minnesota Medicine*[2] contains an important article by Dr. Gordon Kammon, in which the history of the subject is reviewed and four cases are described in which Froin's syndrome or a modified form of it was found. It is a curious fact that while to-day the presence of Froin's syndrome is always considered suggestive of a spinal tumour, none of Froin's original cases were tumours; one was a case of meningo-myelitis, another had multiple tuberculous foci in the bones, and the third was a case of ascending or Landry's paralysis. After Froin's observations other cases were soon reported, and by 1908 Sicard and Descamps went so far as to say that the syndrome always meant meningitis. During the next year, however, Blanchetiere and Lejonne found the same type of fluid, but without increase of cells, in a case of intramedullary spinal tumour, and this was soon followed by Nonne's observation that cord tumours are associated in general with a pronounced increase in the globulin content of the fluid in the lumbar cul-de-sac, without, as a rule, any change of colour or cell increase. Mestrezat considered that two factors were necessary for the production of Froin's syndrome, separation of the fluid in the lumbar space from the rest of the subarachnoid space, and engorgement of the veins or inflammation of the walls of the vessels below the site of blockage. Ayer brought about the syndrome in cats by causing extradural pressure on the cord by means of paraffin. In 1923 Cushing and Ayer reported five cases in which xanthochromia with the occurrence of a spontaneous coagulum was found in the fluid *above* tumours of the cauda equina, and in the next year Hammes also recorded a case of this type. In view of these observations the theory that loculation plays any essential part in producing Froin's syndrome is no longer tenable; Cushing and Ayer differ in their opinions as to its actual cause, the former holding that it is produced by a transudation into the fluid from the tumour itself, while the latter ascribes it to transudation from engorged veins in the spinal canal. Considering the variety of conditions other than tumours—polyneuritis, tuberculous meningitis, poliomyelitis—in which the syndrome has been found Ayer's theory is the more acceptable. Dr. Kammon does not seem to have been acquainted with a very important and comprehensive article by Greenfield[3] on this same subject.

## HEALTH CERTIFICATES BEFORE MARRIAGE.

THE Royal Institute of Public Health, in session at Bristol last week-end, gave consideration to the advisability of a health certificate before marriage. In the May number of the *World's Health* Dr. Leopold Bard, of Buenos Aires, discusses the Bill dealing with this subject which is now before the Argentine Chamber of Deputies. In his opinion, venereal disease (except tertiary syphilis, and sometimes even tertiary syphilis) should constitute a temporary bar to marriage. What are likely to be the consequences of a marriage when the husband is suffering from venereal disease?—illness, disablement, still-births, poverty, unhappiness, or the bearing of degenerate offspring. One or all of these must be reckoned with. Just as the law provides a penalty for infanticide, so, thinks Dr. Bard, should it punish the spread of venereal disease through marriage. The proposed Bill provides that any man desiring to marry must, during the fortnight preceding the registration of his intended marriage, undergo a medical examination and provide himself with a certificate stating that he is free from venereal disease. This certificate must be furnished by a recognised physician. Provision for medical examination is made by the establishment at the National Public Health Office in the capital of a special bureau for the delivery of pre-matrimonial certificates. In villages or other remote places the certificates may be given by the local medical officer of health. No marriage will be regist[illegible] without previous examination of the male part[illegible] and without production of a certificate sta[illegible]e is free from venereal disease. Any official delivering a marriage form without first demanding presentation of the medical certificate will be liable to punishment by imprisonment, and any physician knowingly making a false statement upon the certificate will be deprived of the right of exercising his profession in any part of the Republic for a period of three years. It will be interesting to see whether public opinion in the Argentine Republic is sufficiently awakened to the dangers of venereal disease for such a drastic measure to become law. The introduction of health certificates before marriage cannot be regarded as purely a health measure, for it touches a grave sociological problem. The institution of marriage is none too stable at the present day. Some may question the wisdom of placing new difficulties in the way of a legal union. May not this formality, slight though it may seem, be sufficient sometimes to tip the scale in favour of an illegal union, undesirable, as experience has shown us, both from the health and social standpoints? Suppose a young man is suffering from a venereal disease. If he has a social conscience he will undergo treatment before marriage. If he has no conscience he may evade the difficulty of a medical examination by contracting an illegal union. If, on the other hand, he be free from venereal disease, the health certificate before marriage is a useless formality. There is, however, this consideration in favour of such a certificate. Many public health workers are agreed that compulsory periodic medical examinations, if introduced, would contribute more than any other measure to the prevention of disease. The marriage certificate would constitute as valuable an index to the health of young men as the army medical examination which showed us up as a C 3 nation. Is it desirable, however, to link up a health measure with a basic social institution such as marriage?

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[1] The Cerebro-spinal Fluid in Clinical Diagnosis (London: Macmillan and Co., 1925), p. 97.

[2] Minnesota Medicine, April, 1926, p. 173.

[3] [illegible] of Neurol. and Psychopath., 1921, ii., 105.

## DIGESTIVE ANAPHYLAXIS.

THE problems of human idiosyncrasy and tolerance have troubled clinicians from time immemorial, and the discovery by Charles Richet of the principle of anaphylaxis marked a distinct step towards their solution. In his earlier experiments he induced the reaction by intravenous injection but, since in practice the offending substances reach the system almost entirely by the mouth, it is "digestive anaphylaxis" which presents the really urgent clinical problem. Few besides those who have given special attention to the subject realise how long the list of possible causes and possible symptoms of this anaphylactic reaction is becoming. Even white wine, which no one would suspect of containing protein, is not guiltless,[1] and Bolten[2] shows that attacks of Czerny's disease and of dysmenorrhœa can both be released by anaphylactic shock. Sir Maurice Craig[3] has shown that certain forms of idiopathic epilepsy also depend on protein sensitivity, and, in fact, it seems probable that any kind of vago-sympathetic disturbance may be excited in this way. Arloing, Langeron, and Spassitch, whose previous work is well known, now set forth[4] the results of an extensive series of experiments on guinea-pigs, with the twofold object of increasing their sum of knowledge of the working of the phenomenon and of discovering the best defence against it. They employed two groups of antigens, one of unmodified substances such as horse serum, boiled cow's milk, olive oil, and solutions of glucose, quinine, and antipyrine, and a larger group composed of products of the artificial digestion of proteins, prepared for them by a well-known firm of manufacturing chemists. This was to eliminate the indigestion factor which is well known to produce anaphylactic reactions apart from the nature of the ingested substance. The latter group included beef, pork, casein, white of egg, fresh-water and sea fish, crab, mussel, and dried peas—all substances known to cause urticaria in human beings. The stock diet was two parts bran and one part hay, and the sensitising meal consisted of 3 c.cm. of peptone solution or 0·3 g. of unmodified substance. This was given on eight consecutive days, and then stopped for a period of 12 to 17 days to allow incubation. Now, the normal organism is protected against digestive anaphylaxis by two mechanisms: the mucosa of the small intestine, which will not allow the intact albuminoid molecule to penetrate it, and the liver, which acts as a barrier against protein. In order, therefore, to make sure of obtaining their reactions, the authors added to the meal small quantities of foreign (ox) bile which has the temporary effect of so altering the histological composition of the mucosa as to allow albumin to pass through it. After a certain amount of repeated anaphylactic shock, the whole of the liver begins to undergo necrosis and to lose its power of protecting the system against proteins. It has already been recognised that many anaphylactic reactions occur after enteritis or vague intestinal trouble, which would have the effect of making the mucosa penetrable.

The guinea-pig is regarded by the authors as a good subject for these experiments, for its behaviour gives ample evidence of the strength of the reaction. They relied on this alone, without testing for the hæmoclastic crisis, which might be affected by other causes. Pruritus, which always appeared, they considered a particularly good quantitative indication. No animal ever manifested convulsions. The syndromes produced were acute digestive anaphylaxis, primary protein shock (without previous sensitisation), anaphylaxis to proteins, fats, carbohydrates and crystalloids, and chronic digestive anaphylaxis. The order of the activity of the proteins was found to be as follows: crab, serum, casein, milk; then, less active, white of egg, beef, pork, skate, mussel, perch. Vegetable proteins had only a feeble action. Olive oil, besides giving a reaction of its own, would release a shock in animals sensitised by other substances. Antipyrine produced a stronger reaction than quinine, and a severe pruritus, a phenomenon not uncommonly seen clinically. Many animals suffered from asthma, and the authors claim that their results here and in the clinic prove the existence of an "épine respiratoire." An interesting conclusion which they draw from the results of administering horse serum, to which the animals could obviously not have acquired sensitivity, is that there is no essential difference between primary protein shock and the anaphylactic reaction. Both show a state of sensitivity, and whether this is innate or acquired is immaterial. Once the sensitivity is established, every dose of the appropriate antigen will produce a reaction, but after about three months their strength diminishes until finally they disappear; the intestinal mucosa has become immune. If, however, the meals are continued for a few more weeks, the attacks return, the reason being that the foreign substance ultimately creates lesions in the intestine and liver that constitute breaches of the natural protective barrier. The anaphylaxis is then chronic. The action of these proteins is not specific, and one will often release where another has sensitised. The severity of the reaction depends on the potency of the releasing protein. Hunger increases the reaction, and tuberculous lesions of the lung tend to force it into a respiratory form. For protection a single minimum dose, or several small doses of any protein, will give a temporary unspecific "sceptophylaxis." The intravenous method is the most effective. Prolonged administration will give first immunity, and then, after a period of months, desensitisation, and it is then possible to sensitise the animal afresh. In practice, in order to obtain immediate protection against accidents, a single dose of antigen will suffice, given by any method. If it is desired to create a more or less lasting immunity, frequent doses should be given of the particular protein to which the patient is sensitive by the path followed by the dose that caused the reaction.

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[1] THE LANCET, 1926, i., 214.

[2] Über Genese u. Behandlung der Exsudati S. Karger, Berlin, 1925.

[3] THE LANCET, 1923, i., 74

[4] Journal de Médecine de Lyon, Ma

Anaphylaxis has long been considered in the light of a curious accident. The Lyon school regards anaphylaxis, idiosyncrasy, and intolerance as essentially the same thing, and has greatly enlarged our conception of this class of phenomenon.

## RAT-BITE FEVER.

The bite of a rat infected with the specific spirillum may give rise to the curious chronic relapsing fever with certain general and local symptoms known as *sodoku* in Japan, where it is very common, or more generally as rat-bite fever. The wound caused by the bite of the infected rat heals quite normally but breaks down at the end of an incubation period of usually two to six weeks, the local condition becomes that of an acute inflammation, while general symptoms soon set in. The disease appears to be fairly widespread and has been reported in this country by T. J. Horder and others,[1] but although common in Japan it does not appear to have been often recorded in China until recently. The question of its prevalence in that country is beginning to attract considerable attention, however, and a case described this year[2] by Dr. E. S. Curtis, of Funing, Fukien, is of some interest. The patient was bitten on the right index finger and too vigorous home treatment resulted in gangrene of the skin of the affected finger. With fomentations and removal of the loosened skin the condition quickly healed up, but exactly 14 days after the bite the finger again became swollen and a gland appeared in the right axilla. The temperature rose to 101° F., the patient complained of pains all over, but with simple antipyretic remedies this quickly settled down and the local condition of the finger began to subside. Ten days later a similar flare-up occurred with some lymphangitis of the dorsum of the hand, and three purplish-red erythematous patches also appeared in this neighbourhood. This acute attack again subsided, but a third flare-up occurred a week later and a fourth a week after that. Each attack lasted about two days and they got progressively slighter, the fourth one being unaccompanied by any local exacerbation in the local condition of the finger. Following the fourth attack three small doses of "914" were given and no further attacks developed. This case appears to differ from the usual description in certain details. For example, the duration of the first attack—namely, two days—was very short as compared with the usual six or eight days. Again, the purplish-red papular rash appears only to have been represented by three spots on the affected hand. The spirillum was not observed in this case, but certain features suggest that possibly the disease in China is not of exactly the same nature as elsewhere and possibly due to a slightly different organism.

## SURGERY OF THE PHRENIC NERVE.

A brief account of the history of phrenicotomy and of the modern radical operation for ensuring hemidiaphragmatic paralysis has lately been published in the *Journal of the American Medical Association* (March 20th). The writer, W. H. Thearle, describes evulsion of the phrenic nerve as a minor and relatively simple procedure easily performed under local anæsthesia. The possible complications and accidents associated with the operation are, he says, relatively infrequent, but he repeats the warning given by Felix against completing the evulsion in far advanced cases with extensive pleural adhesions if cardiac or respiratory disturbances reach any degree of severity. Thearle's experience is in accord with that of other observers—namely, that cough and the bringing up of sputum are made easier by the hemiparalysis of the diaphragm. He issues a warning, however, against the independent use of phrenicotomy as a curative measure in advanced pulmonary tuberculosis, and his general conclusions are summarised in the statement that "radical phrenicotomy is especially advantageous in conjunction with artificial pneumothorax and extrapleural thoracoplasty, and is the primarily indicated surgical procedure in unilateral phthisis with predominantly basal lesions." Of 62 cases treated, 35 were operated on as an independent procedure; 50 per cent. of these were improved, and 10 per cent. markedly improved.

An interesting report of a case of persistent hiccough treated by injections of novocaine into the phrenic nerve appeared in the *Indian Medical Gazette* for March. The patient was a girl and her hiccough had persisted for nearly four months, by the end of which time even ice could not be retained, and she was in a state of profound exhaustion and suffered great pain in the region of the diaphragm. Other remedies having failed, D. M. Ghose, who reports the case, infiltrated the phrenic nerves with 2 to 4 c.cm. doses of a ½ to 1 per cent. solution of novocaine. Six injections were given once daily, and apparently on alternate sides. The hiccough subsided completely and eight months later there had been no relapse. Ghose used the technique of Krogh, inserting the needle two fingers-breadth above the clavicle close to the outer border of the sternomastoid muscle, and thrusting it vertically towards the scalenus anticus for a distance of 2 to 4 cm. (according to the amount of fat). When the nerve is reached the patient complains promptly, as a rule, of transitory pain in the shoulder and region of the heart, and sometimes also in the upper abdomen. Ghose states that perineural infiltration is adequate.

## A NEW TREATMENT FOR STROPHULUS.

The troublesome ailment of infants and young children up to the age of 6 years, alternatively known as lichen urticatus or strophulus, is generally believed to have a direct relation to errors of digestion. The crops of intensely irritable papules—often associated with diarrhœa, constipation, vomiting, or other gastro-intestinal symptom—recur indefinitely, and for no apparent reason, and are especially troublesome at night. Therapeutic measures include a revision of the dietary, administration of stomachics, aperients, lactate of calcium, and bicarbonate of soda, and a variety of baths and local applications. These remedies are all useful, but lay no claim to effect a cure. The frank physician counsels patience, and assures parents that eventually their child will grow out of the trouble. The *Paris Médical*, of April 24th contains the experience of Dr. Pasteur Vallery-Radot and Dr. Blamoutier in the treatment of lichen strophulus with peptone by the mouth, and if their claims should be confirmed this treatment marks a distinct advance in therapeutics. They state that of 20 cases treated and observed for periods of from three to ten months, 10 were cured by one or two courses of ten days each; 4 were cured after a month; 2 were cured in more than a month. Of the 4 remaining, 1 reported cured after a year's treatment, 1 in 15 months, and the other 2 were lost sight of. The method is very simple and obviously harmless, but the details, say the authors, must be very strictly carried out in every case. The first point in the instructions concerns the number of meals. In infants of about 1 year they must be reduced to four in the 24 hours—viz., at 8 A.M., noon, 4 P.M., and 8 P.M. Nothing, except small drinks of water, is allowed in the intervals. The diet may consist of milk, milky foods, purées of potato or French beans, peas, and lentils, bananas (which are always forbidden in England), orange juice, and compôtes of fruit. Older children take three meals only per day: at 8 A.M., 1 P.M., and 7 P.M. Their régime may include bread, biscuits, cakes, eggs, fish, meat (except pork) once daily, sweetbreads, soups, cauliflower, tomatoes, &c. Sweets, especially between meals, are strictly proscribed. The peptone is given exactly one hour before each meal and the granular form of the product will be found the best. The time must be conscientiously adhered to, for it is the most vital part of the treatment. The authors advise courses of ten days of administration followed by periods of five days' intermission. The treatment should not be immediately discontinued when a favourable result has been obtained. It is advisable to prolong it for a month or two after apparent cure, and to employ in succession (*a*) a simple meat product, (*b*) a bivalent, meat and fish combination, and (*c*) one containing a mixture of the peptones from meat, fish, eggs, and milk. The methods of manufacture and the source of the peptone are not indicated in the paper.

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[1] Quarterly Journal of Medicine, 1910, iii, 121.

[2] China Medical Journal, February, 1926.

## LAMBLIASIS AND CHOLECYSTITIS.

A NEW society was founded in Italy last February under the title of "Society of Experimental Biology," with Prof. Giulio Fano, of the University of Rome, as its first president, and issues a bimensal bulletin. In the first number, published last April, Dr. C. Pappalardo,[1] of the University of Catania, describes experiments he made on five cases of cholecystitis in which he used the duodenal sound after the introduction of magnesium sulphate and examined the fluid thus extracted from the gall-bladder. In three of these cases he found mobile forms of lamblia intestinalis; in two of them van den Bergh's test was positive. The hypothesis that the parasites came from the duodenum rather than from the gall-bladder does not seem tenable, since the demonstration was conspicuous only in cases of cholecystitis and was wanting in other cases of gastric affections examined in the same way, and from the fact that the number of lamblia was approximately the same in the samples of bile A and B, while under the theory that the parasites came solely from the duodenum the first portions of liquid extracted should have shown them in greater abundance. Moreover, in view of the observation of Westphal, who in one case found lamblia even in the wall of the gall-bladder, it seems more than probable that in these cases also the parasite came from the gall-bladder. If this be admitted several possibilities suggest themselves: (1) lamblia can be the agent or one of the agents in causing cholecystitis; (2) lamblia may be an evidence of a condition favourable to the implantation of other germs, themselves the cause of the cholecystitis; (3) lamblia may be merely a harmless associate of the germs which produce the cholecystitis. The problem is a complex one and many interpretations of it are possible, but the fact remains of the noticeable frequency of lamblia in bile extracted by the duodenal sound in cases of cholecystitis and the possibility that it represents the only causal parasite. From a therapeutic point of view the cases showed the inefficacy of the usual remedies directed against lambliasis—i.e., stovarsol and repeated duodenal soundage.

## CARBON DIOXIDE IN EMPYEMA.

Carbon dioxide, inhaled in a concentration of about 5 per cent., is becoming recognised as a valuable respiratory stimulus, used especially to accelerate the pulmonary elimination of poisons or drugs, such as carbon monoxide, ether, and alcohol.[2] Since the healing of an empyema is dependent on obliteration of the cavity, the clinician uses every effort to promote expansion of the lung, which is often hampered in its restorative function by the organisation of exudate on the visceral pleura and by fibrosis within itself. In a recent article[3] Dr. E. D. Churchill, of Boston, discusses the methods at present in use for encouraging lung expansion; early ambulatory régime, deep-breathing exercises, blowing exercises, and other expiratory efforts against a partially closed glottis, relief of any respiratory pain by readjustment of the drainage-tube, or, where necessary, injecting or severing the intercostal nerve. Maintenance of a negative intrapleural pressure can be ensured by repeated aspirations, clamping the tube after irrigation during a forced expiration, or the use of one of the many valvular tubes which have been described. Dr. Churchill has not found these latter satisfactory owing to the difficulty in keeping the connexion between the tube and the chest wall air-tight for any length of time. Sealing the rubber dam to the chest produces maceration of the skin, which increases the risk of secondary infection in the cavity. He now adds to these measures the use of carbon dioxide. Henderson's inhaler is left at the patient's bedside and he is instructed in its use with such exercises as are suited to his individual needs. The average convalescent inhales the gas for five minutes 15 or 20 times a day. The dizziness and unpleasant subjective symptoms often experienced in respiratory gymnastics, largely due, in fact, to the blowing off of $CO_2$, do not occur when this gas is inhaled. Dr. Churchill has found that the stimulation of the gas throws all the respiratory muscles into action and restores or maintains the symmetry of the thorax, whereas exercises without the gas only bring the muscles of inspiration into action during the preliminary deep breath. A tracing shows how the forced expiration produces a positive intrapulmonary pressure and the forced inspiration a negative intrapleural pressure, and the much greater regularity of the effect of carbon dioxide over blow-bottles or coughing.

## THE MEASUREMENT OF X RAY DOSAGE

ON May 20th a joint meeting of the Rontgen Society and the Electro-therapeutic Section of the Royal Society of Medicine was held to hear the seventh Mackenzie Davidson memorial lecture delivered by Dr. A. Dauvillier, of Paris, who spoke on the Measurement of X Ray Dosage. The subject was fittingly chosen for an address commemorating a great radiologist, since it is one of great practical importance. At the present time many types of X ray dosimeters are in use. Most of them furnish an indication of the intensity of a beam of X rays, provided that the wave-length of these rays remains constant. In attempting, however, to compare the effects of X ray beams of different wave-length a difficulty arises with these indicators, for secondary radiations may be produced by X rays of one wave-length, but not by those of another, and most dosimeters therefore give no reliable estimate of the intensity of the respective beams. Hence the need for an international unit of X ray intensity and a standard method of measuring it has become acute and has led to the formation during the past year of an international committee to consider the problem.

In the course of his lecture Dr. Dauvillier discussed in some detail the mechanics of the action of X rays on matter. Early in the history of radiology, he said, Sir William Bragg had put forward the view that effects observed with X rays were due to the ionisation of matter irradiated by them, and time had amply verified this hypothesis. A considerable study had been made of the process of ionisation by X rays and a flood of light had been thrown upon it by the beautiful photographs of electron tracks obtained by Mr. C. T. R. Wilson. Recently measurements of the numbers of pairs of ions produced by electrons of definite speed had been made and the work done in ionising an atom had been determined. The data furnished by these fundamental investigations made it possible to gain an idea of the true absorption of X ray energy by matter and brought the absolute unit of radiation considerably nearer realisation. The concluding part of Dr. Dauvillier's lecture was devoted to the explanation of a method of measuring doses of X rays which he has evolved. He makes use of a small spherical ionisation chamber equally transparent in all directions to X rays and containing the heavy gas Xenon. When this chamber is exposed to the radiation the ionisation produced in the Xenon is about 500 times greater than is produced in the same volume of air and is sufficiently intense to be recorded on a micro-milliammeter. To render the indications of this instrument reliable for all wave-lengths it is calibrated against a large air-gap ionisation chamber. The use of a large chamber is necessary owing to the considerable distances travelled by the radio-electrons emitted when air is penetrated by X rays, and for correct measurement it is essential that these electrons should complete their tracks before reaching the walls of the chamber. With the help of this method Dr. Dauvillier has found that the energy per cubic centimetre required to produce an erythema of the skin is approximately 30,000 ergs.

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[1] Bolletino della Società di Biologia Sperimentale. No. 1. 1926. Naples: Via S.S. Filippo e Giacomo.

[2] Henderson, Y., Haggard, H. W., and Coburn, R. C.: Jour. Amer. Med. Assoc., 1920, lxxiv., 783, and 1922, lxxix., 1137; White, J. C.: Arch. Surg., 1923, vii., 347.

[3] Boston Medical and Surgical Journal, April 8th, 1926.

## AN EXHIBITION OF MEDICAL ART.

AN exhibition of an unusual kind is to be seen at the Baltimore Art Museum. The exhibits are the work of the department of anatomical and medical art of the Johns Hopkins Medical School. The drawings of Max Broedel, founder and director of the department, are represented by some admirable illustrations of operative technique and dissection. Of especial excellence are the water-colour drawings of human and animal embryos, magnified usually 100 diameters, by William T. Didusch. There are also included in the exhibition coloured wax models by Vladimir Fortunato. One series illustrates in ample number the progress of the conservative operation of prostatectomy by the perineal route. It is unfortunate that the later members of the series are badly lighted. This criticism, however, does not apply to a model of nodular leprosy which is a masterpiece. It is evident that the exhibition represents an experiment, and that in the future similar work may be shown to even greater advantage. Thus the director of the department of embryology has added to the exhibits in his field careful and informative descriptions of the drawings. On the other hand, the series of guinea-pig paintings from the department of tuberculosis, showing the results of intracutaneous tuberculin under various conditions, are furnished with no clue to their meaning. A guide to their scientific interest would surely not detract from the artistic value of the drawings. It may be that in the future such exhibitions will be arranged so that lovers of art may become interested in the progress and versatility of scientific medicine.

Prof. A. J. Clark has been chosen to succeed the late Prof. A. R. Cushny in the chair of Materia Medica and Pharmacology in the University of Edinburgh.

Sir John Williams, Bart., G.C.V.O., consulting obstetric physician to University College Hospital and President of the University College of Wales, died on May 24th at the age of 85.

Dr. Ernest Septimus Reynolds, consulting physician to Manchester Royal Infirmary and Emeritus Professor of Clinical Medicine in the University of Manchester, died on May 22nd at the age of 65.

Dr. Hugh Cabot, C.M.G., professor of surgery and dean of the Medical Faculty of the University of Michigan, Ann Arbor, is coming over to take charge of Sir Holburt Waring's surgical clinic at St. Bartholomew's Hospital from Monday, May 31st, until Saturday, June 12th. During this time he will deliver four lectures in the Medical School—viz., Wednesday, June 2nd, at 12.45 P.M., Non-tuberculous Infections of the Kidney; Friday, June 4th, at 4.30 P.M., a second lecture on the same subject; Wednesday, June 9th, at 12.15 P.M., The Present Position of Prostatic Surgery; and Friday, June 11th, at 4.30 P.M., Tuberculous Disease of the Kidney.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXXIV.

## THE TREATMENT OF PERIURETHRAL ABSCESS.

FROM a clinical standpoint periurethral abscess may be divided into two classes—those associated with the penile and those with the bulbous urethra.

### *Penile Periurethral Abscess.*

The first class of case is comparatively simple. The abscess arises in an infected follicle of Littré, as a complication of acute (rarely chronic) urethritis. A tender induration can be felt on the under surface of the penis. Left to nature the abscess frequently bursts externally, and a urinary fistula may result. Early incision per urethram is the best method of abruptly terminating these untoward possibilities. The operation is satisfactorily carried out under gas anæsthesia. The help of an aëro-urethroscope is desirable, but if the abscess is near the meatus, as it usually is, it may be dealt with by inserting a tenotome down the urethra.

### *Uncomplicated Bulbar Periurethral Abscess.*

By "uncomplicated" it is meant that there is neither acute retention nor extravasation present. In the majority of cases the abscess occurs behind a stricture of the bulbous urethra. This is a much more serious condition than the penile abscess considered above, for *bulbar periurethral abscess is the commonest cause of extravasation of urine.*[1]

Under general anæsthesia, with the patient in the lithotomy position, an incision is made in the perineum exactly in the middle line. There is frequently much induration around the walls of these abscesses, and one has to proceed to what appears to be some considerable depth before striking the pus, which, as often as not, is quite small in amount. The after-treatment consists in daily irrigation of the perineal wound with eusol through a Higginson's syringe, and the patient is encouraged to sit in a sitz bath for at least half an hour twice daily. When the inflammation has abated and the perineal wound looks quite clean—usually in about ten days time—the renal function is tested, and if this is found to be satisfactory the stricture of the urethra receives attention. Occasionally it is possible to dilate the stricture with bougies, but in my experience these cases usually require an internal urethrotomy. A catheter is then tied in. This allows rapid closing of the perineal wound. The catheter is changed every fourth day until the perineum is soundly healed. Throughout the after-treatment a mixture containing sodium acid phosphate gr. xxx. is given three times a day with urotropin gr. x. Before the patient is discharged he should be warned that the stricture requires regular dilatation. The end-results of the treatment of this condition are gratifying.

### *Periurethral Abscess with Extravasation.*

A periurethral abscess with extravasation represents a later stage of the condition described above. The general condition of the patient is usually grave. Oft-repeated rigors are the rule and may mislead the casual diagnostician. A local examination rarely fails to reveal the true nature of the condition. There is the obvious swelling in the perineum, the scrotum is infiltrated, and later the extravasation spreads up on the abdominal wall. The cellular tissues of the penis are involved about this time, and the condition rapidly passes on to gangrenous cellulitis. Sir Benjamin Brodie noted that a black patch on the glans penis was a harbinger of death. In all probability the patient has had more or less complete retention of urine for some days, and he is definitely uræmic. The grave general condition is due to combined septicæmia and uræmia. Nevertheless, it is astonishing what a large percentage of almost hopeless-looking cases will recover with prompt and careful treatment. On account of the uræmia a general anæsthetic is contra-indicated. I believe that the routine use of intrathecal stovaine has done much to reduce the mortality.

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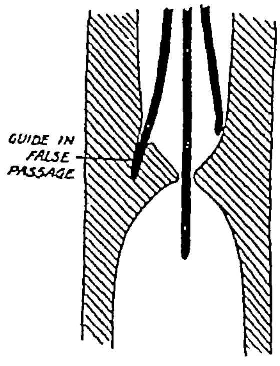
[1] Bailey and Huddy: Brit. Jour. Surg., 1924, xii., 153–161.

FIG. 1.



The "faggot" method of passing bougies.

The following procedure has given most satisfactory results. The urethra is washed out and an attempt is made to pass a bougie into the bladder. Great gentleness must be exercised, for the inflamed urethra is easily perforated. It is usual to be able to pass a No. 3 or 4 French bougie. In the absence of an instrument by which the bougie can be passed under direct vision the "faggot" method (Fig. 1) is of distinct value. This method consists in passing a second, third, and even a fourth bougie down the urethra alongside the first; by trying each in turn, one of the number is gently coaxed through the stricture. If the stricture is impassable Wheelhouse's operation must be performed. If the bougie has been passed (and this is possible in the majority of cases) it should be fixed in position. The patient is now put in the lithotomy position and a sandbag placed under the sacrum effectively exaggerates this position. Lane's tissue forceps are clipped upon the most dependent part of the infiltrated scrotum. These serve as scrotal retractors. By this method the scrotum is pulled up and the perineum clearly exposed to view. An incision now is made, strictly in the middle line, from the base of the scrotum to within half an inch of the anal verge. The incision is deepened until the abscess is opened. A finger is now passed into the wound and the bougie within the urethra is sought for by palpation. The floor of the urethra is next incised on to the bougie. The left index finger is passed into the dilated urethra with the pulp against the bougie. The finger is thus guided into the bladder. A large coudé catheter is then passed through the incision along the index finger into the bladder and secured to one side of the wound by a stitch.

*Drainage of the Cellular Tissues.*—The left forefinger is now passed through the perineal wound upwards and outwards, clearing the crus penis, and made to protude subcutaneously above and to the outer side of the symphysis pubis (see Fig. 2). The skin is then incised over the finger and drainage-tubes, with lateral perforations, are inserted as shown in the diagram.

*Incisions into the Infiltrated Tissues.*—In contrast with older methods fewer, but larger, incisions are recommended. There is a tendency on account of the infiltration for these incisions to be too superficial; they must penetrate the limiting fasciæ. If time permits hydrogen peroxide can be injected hither and thither into the infiltrated tissues by means of a Record syringe fitted with an aspirating needle, for it has been shown that the organisms in the exudate are mainly anaerobic.

*Dressings.*—Dressings soaked in eusol are applied over the abdominal wall, perineum, and scrotum. These are covered over by packing towels, and the whole is secured by a T-shaped bandage.

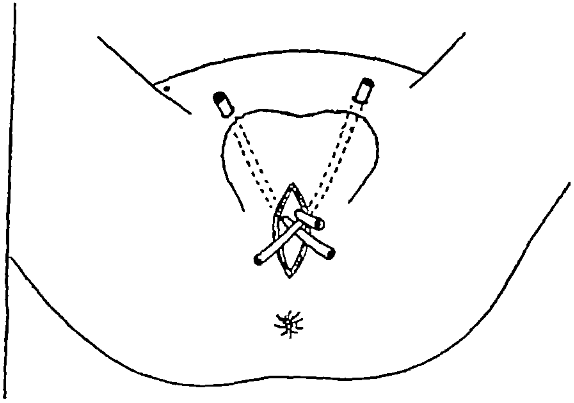
### *After-treatment.*

During the first 24 hours the patient is encouraged to drink as much fluid as possible. Rigors are usual during this period and are most satisfactorily combated by hot gin and quinine. The catheter is removed at the end of 48 hours. Every four hours all the wounds are irrigated with eusol, after hydrogen peroxide has been instilled for a few minutes. As soon as the general condition permits, sitz baths are instituted, and throughout the convalescence the sodium acid phosphate mixture is prescribed in liberal doses.

A *residual abscess* is frequently seen in the flank, just above the anterior superior iliac spine, and should be opened under gas anæsthesia.

When the infection has subsided, which is usually in about a month's time, the stricture should receive appropriate attention, as outlined above. Very great care must be taken to investigate the functional activity of the kidneys before undertaking the treatment of the stricture. A weekly blood-urea estimation during convalescence from the acute stage will indicate when the time is ripe for the second operation. The patient should not be discharged until the perineal wound is soundly healed. The long illness usually completely undermines the morale of these patients, and the weekly dilatation of the urethra becomes to them an ordeal of very considerable magnitude. The necessary dilatation calls for much tact and gentleness on the part of the surgeon. An instillation of 2 per cent. borocaine for five minutes before instrumentation goes a long way towards making the procedure painless.

FIG. 2.



Methods of drainage.

**HAMILTON BAILEY, F.R.C.S. Eng.,**
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**LIVERPOOL: NEW MATERNITY HOSPITAL.**—The first part of the new maternity hospital is now ready for use and has been open to public inspection for three days. There has been a steady flow of visitors who acquired a link with the institution which it is hoped they will never forget. The first part, which is roughly one half of the intended whole, contains 54 beds arranged in prenatal, labour, and postnatal wards. The labour ward and operating theatre block forms one well-designed unit with anæsthetic, sterilising, and scrubbing-up rooms common to both parts. Lighting is admirable, one half of the large theatre being designed chiefly for use by day, and the other for times when artificial illumination is required. The wards are intended to accommodate only eight patients each and they have nurseries attached. A number of single-bedded rooms suitable for special cases is also provided. As an integral part of the hospital there is a large out-patient department with separate and well-equipped examination rooms, an antenatal clinic, and the central branch of the Maternity District Nurses' Home. The administrative offices, nurses' home, and resident medical officers' quarters are, of course, complete, and are modern and attractive. The whole of that portion of the hospital which is now complete is to be known as the Sir William Hartley Memorial Wing in acknowledgment of the generous bequest to which the new hospital largely owes its existence.

# Special Articles.

## ADVICE UPON DISINFECTANTS AND SICK-ROOM DISINFECTION.

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### *Some General Considerations.*

WHEN practicable, infection should be destroyed as near as possible to the fountain-head—the infectious human being. When the virus is contained only in the evacuations this is practicable; when it is given off from the nose and throat or skin it is impossible to achieve more than partial success, and the infection becomes disseminated throughout the room.

Although complete disinfection of an infected sick room is not possible until the sufferer is no longer a source of infection, there are obvious advantages, from the standpoint of the patient and nurse, in keeping down the infective elements in the room during the whole of the infectious period. With this object in view discharges from the mouth, nose, &c., may be collected by means of paper or rags and promptly put into the fire which is so desirable in every infectious sick room, before they can become dry, and much infection of the sick room may be collected and removed daily by damp sweeping and dusting.

In the destruction of infection we have not, in practice, to deal with naked organisms. They are always associated with more or less organic matter which itself may impede, reduce, or destroy the agent employed. Hence there must always be a time exposure to the disinfectant, and the agent employed must possess a permanence in action for at least 20 to 30 minutes. The handicapping effect of the medium in which the germ is embedded and the resisting power of different germs may vary considerably, and so knowledge and care are necessary in the selection of an agent which will meet all practical purposes.

Those disinfectants which by giving up oxygen soon expend themselves upon the dead organic matter are inferior to those which have a greater permanence of action and exert a selective effect upon the living organisms. Chlorine, potassium permanganate, and Condy's red fluid (a mixture of the permanganate and sulphate of soda) are oxidising agents, and chlorine loses strength under the ordinary conditions of use. The perchloride and the iodide of mercury, and the higher homologues of phenol, kill by their combination with the albumin of the organism and by their toxic effect, and they represent the most effective of the liquid disinfectants.

The strength at which a disinfectant is employed will depend upon two considerations: the resistance of the organism to be destroyed, and the amount and nature of the diluting material to which it is applied. Especially is it important to bear in mind the last-mentioned factor. Suppose, for instance, that a disinfectant is germicidal in 15 minutes when made up to a strength of 1 : 200; if this dilution is added to an equal quantity of urine the strength of the disinfectant will then be 1 in 400, and disinfection cannot be secured. Therefore agents added to liquid or solid matter must be made up to at least twice the strength employed for other purposes in order to ensure that after admixture they are not diluted to below their killing strength.

For every purpose it is best to employ either a liquid disinfectant or heat. Powders, gases, and vapours are less effective. Heat is a most valuable disinfecting agent. Infected articles that can be kept in boiling water for 20 minutes are thereby efficiently disinfected; but when this method is applied to bed and body linen stained with albuminous matter, such as blood or fæces, the stains should be removed by soaking in cold water and rubbing if necessary with a little soap, prior to placing them in the boiling water. Steam stoves are employed by local sanitary authorities for disinfecting mattresses, pillows, clothing, &c. This is found to be the most satisfactory way of securing the rapid penetration of heat sufficient for disinfecting purposes.

The mercury salts suffer from the drawback that they are very poisonous to human beings, and being colourless and non-odorous in solution may be mistaken for water; they attack and damage metal receptacles, and they precipitate albumin which may serve to shield micro-organisms. This precipitating effect can be greatly reduced, however, by acidulating the solution; ½ oz. of the perchloride, 1 oz. of hydrochloric acid, and 1 gr. of aniline blue to 3 gallons of water is a valuable disinfectant solution containing 1 : 1000 of the perchloride.

Phenol (carbolic acid) was formerly much employed for disinfecting purposes at a 5 per cent. strength, but it has been replaced largely by agents containing the higher homologues of phenol. They are mostly made up as emulsions. Two of the oldest of these agents are the well-known "Izal" and "Cyllin," which, like others now upon the market, are far less toxic, and being many times more powerful, are cheaper in use than carbolic acid; moreover, their odour in the sick room is, generally speaking, far more agreeable to the occupants.

### *Choice of a Liquid Disinfectant.*

Disinfectants containing higher homologues of phenol are to be preferred. This I say because they are the only agents which I know of which combine a high germicidal value with permanence of strength and low toxicity to human beings. Such agents should be put up in the form of a fine emulsion which remains stable under the conditions of use; for hard waters and urine accelerate de-emulsification in unstable emulsions, and an agent with its emulsion impaired may be almost, if not quite, valueless in practice.

The percentage of the higher boiling tar acids, the fineness of the emulsion, and its permanence when mixed with urine should therefore be the great determining factors in making a choice, and so great importance should be attached to physical tests designed to determine whether the emulsion "stands up" well in urine or sea-water, or tends to separate out, from any other cause, on keeping for a reasonable time, whether in bulk or after dilution. The stability of the emulsion may be determined by sight and by comparing the specific gravity of portions removed at different levels.

In addition to the above considerations, evidence should be required from workers of repute upon the relative powers of such agents against several pathogenic organisms (including those of typhoid and tubercle). If such tests have been applied to the germs in the presence of the organic matter with which they are commonly associated, I should not then expect a high germicidal power, but the agent with the highest efficiency under the test conditions should be selected.

The above considerations being favourable to more than one agent, my choice would fall upon the one which does not in any way injure the metal or other surfaces with which it may be brought in contact; is the least poisonous to the higher forms of animal life; and which possesses the maximum deodorising effect. I should also have regard to diffusibility and power of penetration, for especially is the wetting power when applied to dust an important factor when the agent is employed for spraying. This wetting power depends on surface tension, complicated, maybe, by surface concentration, preventing the running together of the liquid to form drops. A disinfecting agent in the form of a colloidal emulsion has, in dilute solution, a surface tension of half that of water, whereas the surface tension of, say, a solution

# MEDICINE AND THE LAW.

### *Professional Discipline—the Right of Appeal to the Courts.*

If a solicitor has been excluded from professional practice by order of the Law Society, he has a statutory right of appeal to the law courts. If a medical practitioner is removed from the Register he has no such right. Some critics have thought that this is an omission which should be remedied; it may, therefore, be worth while to notice how the right of appeal operates in the case of solicitors. The Law Society not long ago ordered a solicitor to be suspended from practice for six months. He had been out riding, and at 2.45 in the afternoon he called at a working men's club and asked for a glass of beer. He was told by the steward that he could not be served as the permitted hours had just expired. He then went up to the chairman of the club, who happened to be on the premises, and gave him a blow or a push, using unbecoming language. The occurrence was undoubtedly indecorous, but, when the solicitor was summoned for it at the police court, he received no heavier penalty than a fine of £2 and an order to pay £2 costs. The Law Society thereupon held an inquiry and suspended him as already stated and he appealed from the Society's order to the Divisional Court. His appeal was dismissed. The judges, even though the Solicitors Act gives a right of appeal, are evidently as unwilling to interfere with the jurisdiction of the Law Society as they have been reluctant to revise the decisions of the Medical Council. The Lord Chief Justice remarked that Parliament had deliberately made the Law Society master in its own house. The case was evidently one for the judgment and good sense of the Professional Committee, and there was not the slightest ground for thinking that they had misdirected themselves. The law courts, one may add, have always exercised a somewhat special jurisdiction over solicitors, for solicitors are officers of the Supreme Court; moreover, judges might well be thought to have expert knowledge of the standards which should be observed in the legal profession. Yet the Divisional Court refused to take the matter out of the hands of the Law Society and did not even call upon the latter to argue its side of the case.

Let us suppose for a moment that the case had concerned a doctor instead of a solicitor. The doctor, if similarly sentenced, would have had no right of appeal as a matter of course. He would have had no access to the law courts unless he could allege that the professional tribunal had been guilty of bias or that the proceedings had somehow been tainted with irregularity. But the solicitor's case which we have just described seems to indicate that an appeal to the law courts, where the right of appeal exists, is not likely to prosper unless there is some flagrant irregularity or misdirection. Any lawyer who has studied the cases decided by the General Medical Council in recent years would be slow to believe that, if a right of appeal to the law courts had existed under the Medical Act, the judges would have upset the tribunal's decision on any single occasion. The existence of a right of appeal to the courts may be reassuring, but those who advocate that such a right should be conceded must not expect too much of it. The judges would, no doubt, say of the General Medical Council—as they have said of the Law Society—that Parliament deliberately intended it to be master in its own house.

### *Workmen's Compensation—the "Odd Lot" Man.*

If a workman has been so seriously injured by an accident that his value in the labour market is gravely diminished, the employer can sometimes find him light duty within his capacity; if so, the workman can still earn wages and thus the maximum compensation need not be paid. But if, owing to bad trade, the employer cannot find the man an odd job of light duty, what is the position? This was the question answered by the Court of Appeal lately in Palmer *v.* Crawshay Brothers (Cyfarthfa) Ltd., a case reported in the *Times* on April 29th. A collier was seriously injured in 1915 in a shot-firing accident; he lost his left eye and his right eye was badly damaged. In 1923 he was given light duty as a watchman guarding coal stocks, but he was assaulted by thieves and was further incapacitated. After medical examination a year ago his compensation was reduced to 8*s.*, but on appeal to the county court it was raised to 10*s.* The judge said the man was so seriously incapacitated that nobody was likely to employ him except his former employers. He would have awarded the maximum compensation if the employers failed to find the workman suitable employment; he considered, however, that the applicant's right to recover compensation was, in view of the nature of his injuries, affected by labour conditions, there being much unemployment in the district. The Court of Appeal has now decided that the county court judge was wrong in taking the current labour conditions into account. The man was an "odd lot" case, and came within the dictum expressed by Lord Justice Moulton in Cardiff Corporation *v.* Hull in 1911. "Odd lot" men are workers who after an accident are left incapable of average capacity in any well-known branch of employment, men who are fit only for special uses and whose powers of work are not a merchantable article in some well-known line in the labour market. When a man is in that category, said Lord Justice Moulton, it is incumbent on the employers to show that he can, in fact, obtain the special employment which is all that he is fit for. The "odd lot" man, in fact, is totally incapacitated unless his employers can find work for him. Adopting this view, the Court of Appeal awarded the collier the full amount on the basis of total incapacity—i.e., 29*s.* 9*d.* per week.

### *Injury from Hair-Dye.*

Another purchaser of "Inecto" hair-dye has been awarded damages for injury attributable to its application. According to her counsel the dye caused sores on the head, a progressive rash, swelling, affection of the heart and nerves, and permanent disfiguration. It was admitted by the proprietors of "Inecto Rapid," who were the defendants, that their hair-dye had unfortunate effects for some customers, whose skin was by personal idiosyncrasy specially susceptible. It was argued, however, that the dye was accompanied by instructions, that the instructions said a test was necessary before using the dye, that the plaintiff, though she had read the instructions, chose to ignore the test, and that therefore she was negligent in applying the dye, had brought the whole trouble upon herself, and was alone responsible. The jury awarded her £500 plus a further sum agreed as special damage. Dr. B. M. Footner, consultant to the defendant company, used the phrase "Inecto dermatitis" which he claimed to have coined. It is, of course, the misfortune of the defendants in such a case that others are known to have suffered similar injuries and to have recovered damages on that account. Whether the hair-dye caused injury in a particular case and whether the vendors gave adequate warning of the danger (if danger there was) in the application of the dye, are pre-eminently questions of fact for a jury to decide.

# PARIS.

(From our own Correspondent.)

### *Protective Value of Anatoxin.*

Lereboullet, Boulanger-Pilet, and Gournay have tested the Ramon antidiphtheritic vaccine, anatoxin, in about 2000 children. Two injections given three weeks apart were effective in 95 per cent. of the cases and the addition of a third injection raised the success rate to 100 per cent. Anatoxin produces practically no local or general reactions, especially in children aged less than 8 years. It should be used particularly in children of 1 or 2 years old, because they are so susceptible to diphtheria, and as it seems to be in increasing demand by French families, the number of hospital cases of diphtheria is expected to diminish. Roubinovitch, Loiseau, and Lafaille have investigated the duration of immunity produced by anatoxin in children vaccinated in 1924 and re-examined 12 to 25 months later. Two injections proved necessary as a routine to assure immunity continuing for one to two years. A single injection, however, gave protection of this duration in about two-thirds of the cases. In a few cases three injections were required to immunise the patients for two years.

### *Hospitals and Sickness Insurance.*

The Chauveau Report, which has just been presented to the Aid and Hygiene Committee of the French Senate, deals with the relations between insured persons and the hospitals. It does not, however, solve the vital question which is exercising the minds of those responsible for the large public hospitals and of teachers of medicine and surgery. The legislation governing sickness insurance allows every insured person to choose his own physician, and the result is that many patients are sent to private sanatoriums or nursing homes. There is a danger that there will be such a falling-off in admissions to the great hospitals that medical teaching will become difficult. This tendency is especially obvious in Alsace. Prof. P. Merklen, writing in the *Presse Médicale*, says that the existing laws on sickness insurance will prove to be boomerangs and opposed to real humanitarianism. These laws are being combated by the national federation of French medical unions (syndicats), which are also uniting to protect physicians against the undermining of their positions, rights, and privileges by undue socialisation of any kind.

### *Legislation on Occupational Accidents.*

Occupational injuries are at present subject to a law of 1898 which permits injured employees to select their own physicians. This law, however, puts professional fees so low that physicians and pharmacists not infrequently ask employees for sums exceeding the officially stated allowances for which the employer is liable. Growth of this practice is tending to limit the employee's free choice of a physician, and it is therefore proposed that the existing regulations shall be modified by changing the official tariff.

### *Hospital Personnel and Professional Risks.*

The official French charities organisation, the Assistance Publique, is considering the question of providing pecuniary protection and indemnities for hospital interns exposed to infection and other professional risks. The only occupational classes not provided for by French legislation have been the medical, surgical, nursing, and other personnel of hospitals and the members of university faculties. The indemnities being discussed refer to allowances for partial or total disability and to pensions for widows and orphans. Disability percentages will probably range from 5 to 100 per cent. This new legislation is to operate as an addition to the present law of March 31st, 1919.

### *Students' Demonstrations at the Faculté de Médecine.*

On account of the fact that Prof. A. Prenant, who holds the chair of histology, gave evidence at the trial of Clerc and Bernardon, who were concerned in a communist murder of the rue Damrémont, certain student groups made such vigorous demonstrations during Prenant's courses that he was unable to go on lecturing. All courses and examinations in histology were officially suspended and this inflicted great hardship on many innocent students. The secretary of the Students' Association has taken up the matter and guarantees the obedience and courtesy of the students, so that the affair bids fair to end in harmonious resumption of lectures and examinations.

### *Inauguration of the American Hospital.*

The new and admirably equipped American hospital at Neuilly was formally opened on May 12th. At the ceremonies the American Ambassador presided, and addresses were given by the President of the French Republic, Marshal Foch, and others.

At the Paris Medico-legal Society, Desfarges recently reported a case of suicide by dial poisoning. Seventy-one tablets were taken, but the quantity of dial per tablet is not stated. The symptoms of intoxication were delayed because the tablets were swallowed without liquid of any sort, but treatment in hospital did not ameliorate the fatal coma. In France the sale of most hypnotics is unrestricted.

The Eleventh French Congress on Legal Medicine will be held from May 27th to 29th. Questions to be discussed include the diagnosis of drunkenness, determination of alcohol in the blood, physicians' depositions and oaths, testimony offered by psychopaths, traumatic arthritis, and the pathology of traumatism.

The Thirty-fifth Congress of the French Surgical Association will be held from Oct. 4th to 9th. The special subjects will be the pathology of the meniscus of the knee, conservative operations in inflammatory adnexal lesions, and the treatment of progressing gonococcal arthritis.

A vacation course on Diseases of the Liver and Pancreas, including Diabetes, will be held from June 28th to July 9th at the Clinique Médicale de l'Hôtel-Dieu. The course will be essentially practical and will be directed by Prof. Maurice Villaret. Particulars may be had from the secretary of the Faculté de Médecine.

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## BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

### *Domiciliary Care of the Insane.*

AT a recent meeting of the Royal Medical Society Prof. Rudolf Fabinyi said that there was no greater need in the treatment of mental disease than for the proper nursing and supervision of insane persons outside hospitals and asylums. The majority of the insane, including psychopaths and imbeciles, could be kept within their own families, and this arrangement made nursing more pleasant, and permitted the patients to earn their living whenever they were able. Supervision in the home, he said, relieved the public purse by reducing the number of institutions needed; it safeguarded the public safety; and it was also of some prophylactic value, since care could be extended to those who had never been inmates of institutions, to those who had early symptoms only, and even to those who had merely a tendency to mental trouble. In some of these cases disease might be prevented by expert treatment. Such arrangements, he said, were already in operation in Germany, France, and North America. He had studied the two systems in vogue in Germany. An example of one of them was the Nürnberg-Fürth-Erlangen Fürsorge, established by Kolb, which had already been copied at Mannheim, Regensburg, and Munich. Under this scheme the Fursorgestelle was independent of the district lunatic asylum. At Frankfurt, on the other hand, the Fürsorgestelle, founded and directed by Raecke, was an organ of the municipal sanitary office, which (so it seemed) did not allow the experts so free a hand. The patients under care were not only those dismissed or on leave from institutions (with their own consent or that of their relatives), but also patients referred by the magistrates. These were mainly psychopaths. In Nürnberg-Fürth-Erlangen there were more than 1500, in Frankfurt nearly 3000, in Mannheim 420, and in Munich, where the Fürsorge had only been established last year, there were 300 patients under supervision. The Fürsorge did not confine itself to treating the psychic ailments of its patients but also settled their affairs for them, provided legal advice and advocates, procured work, and saw that they had medicine and small sums of money. In general, said Prof. Fabinyi, the scheme was a success, though it could not be denied that there were occasional accidents and suicides. Describing plans for a system shortly to be established in Budapest, he said that, like Kolb in Germany, he was in favour of slow gradual extension of the organisation. First of all the patients discharged from the huge asylum at Lipotmező were to be placed under care; next those voluntarily reporting would come under supervision. For the present the centre would be an office at the asylum, which would give free advice; later on this would be moved to the middle of the city; and, last of all, the organisation would undertake the care of cases referred by the magistrates.

### *Critical Position of Hungarian Doctors.*

The regrettable financial straits in which Hungarian medical men find themselves are described in an article recently published by Dr. Valko Rezsö. The proverb "Galen dat opes," he says, does not apply to Hungarian doctors, who have to fight a hard battle to gain even the bare necessities of life. This is not to be wondered at, for the number of practitioners in Budapest has been trebled in recent years. In 1919, before the partition, by which Hungary lost two-thirds of her territory and population, there were 5750 doctors in the whole country and 1814 in Budapest. According to the medical annual there were 2584 physicians in Budapest alone in 1925 and 5466 in the small territory left to Hungary. This unfortunate state of affairs, at a time of great economic difficulty, has made it utterly impossible for all these doctors to earn their living with the honesty on which the Hungarian medical profession has always prided itself. It is no exaggeration, in the words of Dr. Valko, to say that Hungarian physicians have to fight a life-and-death battle for their daily bread. In this struggle medical ethics are sacrificed and the consequence is that doctors do not even stop at criminal abortion. (The Minister of Labour has issued an Order relating to the notification of all abortion cases and enforcing the most stringent control of those midwives whose reputation is not above reproach.) Dr. Valko thinks that the serious financial difficulties of the doctors could best be solved on the following lines: Only the very best scholars should be admitted to the medical faculty of the university. Young doctors sent out from the university, clinics, and hospitals should be given the fullest support by local branches of the Medical Association. All vacant appointments should be registered and the register should be easily available for consultation. The Sickness Insurance should be reformed—this is already being done—so as to permit patients to choose their own doctors freely. Besides making these recommendations, he draws attention to the urgent need for improvement in the financial position of village and country doctors. Provision must be made for getting them suitable dwellings, for in most cases housing difficulties make it impossible for young doctors to settle in the villages. If a decent livelihood could be got in the countryside the capital would be relieved of many surplus doctors and there would no longer be three medical men to every 1000 of the population, as there are at present. Decentralisation is all-important. The problem of the old and invalid members of the profession could be solved, he suggests, by setting up some system of old-age pensions. If all these things were done it is possible that the next decade will bring back the old prosperity which the Hungarian profession enjoyed before the war.

### *Memorial to Prof. Moravcsik.*

A volume has been issued in memory of Prof. Rezsö Moravcsik by his late pupils. It contains a collection of dissertations dealing with the important problems of psychiatry and neurology and reflects the many-sided intellect and inspiring personality of this great teacher. It begins with a short account of his life by one of the most eminent of those whom he taught—Ödön Német. Then follow a series of the professor's own addresses and papers, and, lastly, a collection of 20 articles written by his pupils. The whole is published under his motto: "Officium ante omnia."

# Public Health Services.

## HEALTH OF THE CITY OF LONDON.

IN his survey report for 1925 Dr. W. J. Howarth discusses the problems peculiar to his district, which has a resident population of 13,000, a working-day population of some 400,000, and casual daily visitors who probably number as many again. The sites continually increase in value; every spare inch of land has to be utilised, and many of the residents are thus crowded into uncomfortable corners. Although the main streets are reasonably wide, many of the connecting lateral streets are very narrow—sometimes little more than alleyways. Scavenging is difficult as most of the premises are lock-up places, and there are only a few hours available for the collection of refuse if the work is to be completed by 9 A.M.; an important advance will have been made when the corporation has succeeded in enforcing the by-law that all refuse must be stored in impervious metal bins provided with lids. The feeding of the large day population is another big problem. A few business concerns cater for their employees on the premises, but the lack of room for extensions prevents this being done generally. The control of the catering tends to fall into the hands of large firms with up-to-date methods and well-organised kitchen establishments. The smaller unsuitable private restaurants are gradually disappearing. A lighter midday meal, "occupying not a quarter of the time of the former midday feast," is the rule, and the whole tendency of city life is to concentrate the work into fewer hours. The food-supply of the worker to-day, says Dr. Howarth, compares favourably with that of 20 years ago, and the chief fault lies with the customers themselves, who do not fully appreciate the essentials of a suitable meal. The increase in the newer type of cheap restaurants has certainly benefited large numbers of people by abolishing the haphazard meal of the penny bun and drink at the fountain.

The increase of business premises and the covering of site areas has made the City quite unsuitable as a general place of residence. Parents bring up children under considerable difficulties, for traffic renders the streets unsuitable for playgrounds until after 7 o'clock in the evening, and little children living on the fourth storey cannot get fresh air. Many buildings regarded as handsome and adequate structures in early Victorian days are now sublet in rooms; dominated by larger and higher buildings, they are now in dark corners. The wood-work of these older buildings is decaying and the fabric is past economical repair. These blots on the City will be materially reduced when the Hutchison-street and Vine-street areas have been dealt with. In the proposed reconstruction schemes accommodation will be provided both outside the City at Shepherdess-walk and inside the City in the Hutchison-street area. The Court of Common Council has approved the provision of 104 tenements at Shepherdess-walk, comprising 342 rooms. This will cost £95,000. The tenements are to include 6 five-roomed flats, 40 four-roomed flats, 36 three-roomed flats, and 22 two-roomed flats, each with its scullery, bathroom, and w.c. The tenements to be provided at Hutchison-street on the site of the demolished buildings will provide for about 250 persons. This provision will, of course, involve a charge on the rates. One of the difficulties in the City is to provide sanitary conveniences, another is to secure proper ventilation for underground kitchens, workshops, and restaurants. Several ingenious plans for dealing with this latter problem are included in Dr. Howarth's report. He is very anxious to secure a clear legal definition of the term "workplace," and is strongly of opinion that an office in which people are employed in clerical work only should be included under this term Control is especially necessary where basements are in continuous occupation. Dr Howarth hopes to see an annual improvement recorded in connexion with the sale, transport and handling of meat and meat products The meat regulations of 1924 are being gradually put into force, and prosecutions were successfully undertaken in October for failure by persons carrying meat to use overalls and head coverings The registration of places where food is prepared is an urgent requirement, and in addition prepared meat should be amongst the products in respect of which effective regulations preventing contamination are operative " It is anticipated that the slaughter-houses in Aldgate will shortly be closed so far as the slaughtering of cattle is concerned

The births registered in the City numbered 327, and of these 260 were to non resident parents The number of births credited to the City after the addition of 33 children born outside is 100, making a birth rate of 7 5 There were 705 deaths registered in the City during 1925, 633 being those of outsiders ' There were 81 of City residents in outside districts and the death rate is 11 7, the same as that for the whole metropolis There were six deaths of infants under 1 year making a rate of 60, and phthisis caused a rate of 0 07, as compared with 0 91 for the metropolis

The need for strengthening and enforcing the enactments against the pollution of the atmosphere by smoke is well illustrated by a table Another table shows that cremations in the United Kingdom numbered 2700 in 1925 as compared with 2300 in 1924 Full particulars of the meat dealt with in the markets are included in the report During 1925 courses of lectures on meat inspection were given by the medical officer of health, the veterinary surgeon and the senior meat inspector They were well attended by executive officers of local authorities in the home counties The Sanitary Committee has had under consideration the question of the damage and nuisance caused by the increasing number of pigeons in the City of London estimated to number about 4000 It might have been expected that the reduction in horse traffic with the lessening of nosebag droppings would have decreased the number of pigeons but this is probably compensated for by more people providing pigeon food bought from street vendors

### SPECIAL SCHOOLS.

*List of Certified Special Schools Recognised Institutions for the Training of the Blind and other Defective Students and Nursery Schools in England and Wales.* H M. Stationery Office. 1s.

THIS compilation will be found indispensable to school medical officers and useful to all who are concerned in the education of defective children and adults. The provision made appears ample at first sight but the impression fades when the accommodation reported as available is compared with the numbers of defectives known to the Ministry of Health and the Board of Education The list describes provision for about 45 000 defectives, whereas over 170,000 of such children are known to the school medical service, and many are admittedly not yet ascertained. The blind, deaf, and tuberculous child is well catered for but the needs of the epileptic and the partially blind and deaf—a recently recognised but important class—are still very poorly supplied Appropriate teaching is available for under 17 000 out of 30,000 known feeble-minded children The special schools are moreover, very irregularly distributed, London still has an undue proportion (174 out of 526) and many larger wealthy authorities do little or nothing for their afflicted children There is grave reason to fear that the provisions of the new Economy Act may be used to perpetuate, if not to aggravate this unfortunate state of affairs. Local vigilance will be necessary in the next few years to preserve for the physically and mentally handicapped that special training which is for them an essential preparation for the battle of life

### THE PORT OF TYNE.

In his annual report for 1925 to the Tyne Port Sanitary Authority Dr W E Harker states that 74 vessels were visited by him on account of reported or suspected sickness on board, two cases of scarlet fever, one each of small pox and enteric fever, were removed and necessary disinfection done No infectious disease was found among the 9110 alien passengers, who were mostly clean No case of cholera, plague or yellow fever came under notice, but 4538 rats were caught in 100 vessels, 83 were killed with sulphur dioxide in 15 ships, hydrocyanic acid was not used. The dead rats, more than half of which were black, were burnt in the ships furnaces. None was plague-infected Twenty-one ships from ports infected or suspected to be infected with cholera had their drinking water tanks emptied and purified The chief diseases reported during the previous voyage or found on arrival were: accidents 200 (10 deaths), venereal disease 78, feverish colds 81, malaria 35, influenza 19 (1 death), consumption 15 (2 deaths), pneumonia 11 (2 deaths) heart disease 10 (5 deaths) The main food imports into the Tyne were wheat, sugar, eggs, and fruit, of which were condemned 54 tons potatoes, 1206 lb corned beef, and 4 stone of oranges. The fish landed was good but 43 of 8058 fishing vessels had to be cleaned and deodorised In 9185 inspections of ships sanitary defects were found more often in foreign-going (11 per cent) than in coasting (3 per cent) ships Peaks forecastles, w c s, and bilges of 1108 vessels were found dirty and were cleansed, 1025 old beds were burnt on account of infection. Structural defects as follows were notified and rectified side ports for refit, 305, defective w c 's, 94, deck leaking, 80, defective stoves 58; water-tanks cleansed 21 The 18 water-boats of the port were examined and their tanks found in good condition The Tyne floating hospital is used for isolation and treatment of the more dangerous infectious diseases from abroad, and as a cleansing and disinfecting station; other infectious cases are sent to the city infectious hospital The usual measures were taken for the relief of venereal disease but Dr Harker offers no estimate of their usefulness

## SCHOOL MEDICAL SERVICE

IN the following table the figures given in the reports from Sheffield, Leamington Spa, and Taunton are summarised

| Name of town | No on roll | Av elem. school attendance | No of routine children examined. | No of special examinations and re-inspections | Percentage of children found on routine examination requiring treatment * |
|---|---|---|---|---|---|
| Sheffield | 81,271 | 72 772 | 26 221 | 115 308 | 15 46 |
| Leamington Spa | 3 323 | 2 935 | 1 095 | 1 937 | 9·6 |
| Taunton | 3,021 | 2 753 | 1 010 | 2 437 | 20·2 |

* Excluding uncleanliness and dental defects.

### *Sheffield*

Dr Thos Chetwood explains the unusual brevity of his report by the difficulty experienced in keeping pace with statutory requirements owing to illness in his staff, so that no time was available for other work Those familiar with his previous reports will regret the loss Financial restrictions continue to retard the natural growth of the work in Sheffield, although there is some evidence of progress. The extensions to the two open air schools have been in use this year, and the number of school places has been increased from 201 to 281 A new school for 150 mentally defective elder boys has received approval—another extension of high economic value for it is this type of school which makes employable and decent citizens out of those who would otherwise be burdens to the community The junior M D schools have accomplished much; out of 153 past pupils 96, or 63 per cent., are now employed, a proportion which is higher than that for the physically defective school (52 per cent.) or for the deaf (40 per cent.). The amount earned is small, but work with a wage of even 10*s.* a week is better than idleness. The physically defective schools include the King Edward VII. Hospital sanatorium school for surgical tuberculosis, staffed by teachers appointed by the Education Committee which is doing excellent work, and efficient after-care is given by the Cripples Aid Association. Orthopædic agencies in Sheffield fulfil the requirements of the Board, except that there is no orthopædic surgeon under the Education Committee—a serious omission. 289 children who had passed through an open-air school were followed up. Of these 162, or 56 per cent., returned to elementary schools, 70, or 24 per cent., left over age, while 28, or nearly 10 per cent., had to be referred to the tuberculosis officer. It is much to be regretted that the Redmire Camp scheme has been abandoned; a new country home for sick children was, however, opened last year by an organisation belonging to Sheffield teachers. The first case of small-pox during the recent outbreak was discovered at the school clinic.

### *Leamington Spa.*

Dr. W. L. Goldie, in his report on the Royal borough, depicts a locality which is fairly healthy and perhaps a little easy going. The percentage of defects found (9·6) is distinctly low, but the methods of dealing with exceptional children are not very extensive. Good work is done at the school clinic and the facilities for treatment in general appear to be adequate. Dental treatment, noted as necessary in 875 cases, was given in only 357 children. No children are noted as actually in need of treatment for malnutrition and no scheme exists for the provision of meals. There are no special schools in the borough and several feeble-minded and physically defective children are in attendance at elementary schools, apart from 38 who are merely delicate children. Special schools are necessarily less easy to provide in small communities, but a beginning might be made with an open-air school or class. Table 8, which gives a survey of the capacity and sanitary equipment of each of the eight schools, reveals considerable variation and apparent anomalies—for example, most of the schools have one class-room to 30 or 40 pupils, but one infant school seems to have only two class-rooms with 154 on the register. Dr. Goldie notes that none of the schools is provided with a drying room.

### *Taunton.*

Dr. J. Allen, who is also medical officer of health and in charge of the maternity and child welfare departments, gives a clear outline of the school duties which he has carried out unaided except for the part-time services of an ophthalmologist and of a dentist. Two nurses act as attendance officers in addition to their school work; a part-time dental nurse is also employed. During the year Dr. Allen has made a special inquiry into the number of feeble-minded, tuberculous, physically defective, and exceptional children in his area, and each child has been individually examined—no light task with the routine work as well to do. The proportions of blind and deaf children approximate closely to the figures estimated by the Board of Education, but he found 73 feeble-minded children against the Board's estimate of 24; 74 crippled children were noted compared to the Board's figure of 28; 90 delicate children were found where the estimated number would be 43, and 60 cases of active pulmonary or glandular tuberculosis as against 11. The disparity in the figures for mentally and physically defective children is not remarkable, as there is general agreement that the Board's estimates are on the low side, but the number of tuberculous children (confirmed by the tuberculosis officer) is disturbingly high. An orthopædic scheme is now in force jointly with the Somerset County Council, but the proposal for a new special school to be run on open-air lines has unfortunately been postponed.

# Correspondence.

"Audi alteram partem."

## X RAY TREATMENT OF CANCER.

*To the Editor of* THE LANCET.

SIR,—The critical position of the X ray treatment of cancer at the present time is attributable to two main causes. First, the impossibility of arriving at accurate physical dosage, even with the newest and most complicated apparatus of the ionisation type, some of which, even in their commercial form, require the services of a whole-time physicist. The error of such measurements may reach 20 per cent., and the conception upon which current dosage tables are founded has been proved wrong by subsequent work. In particular Borrel, Altman, Glocker, Rothacker, and Schönleber have shown that these tables make too great an allowance for increase in depth dose by scattered radiation. Ionisation measurements have no advantage over the older pastille and photographic methods in the hands of an expert.

Secondly, the theories upon which X ray treatment has been based are now no longer tenable. The law of Arndt Schulz, which states that small doses excite, moderate doses inhibit, and large doses destroy, must be discarded in its entirety. It is this law which allowed the conception of an "irritation" dose to penetrate into Rontgen-therapy. Holzknecht has shown from clinical experience that the "irritation" dose does not exist independently, but is only an early stage of the destructive process which follows every Rontgen irradiation. When small doses are given the "irritation" stage can be observed for a longer time, when large doses are given the "irritation" phase is obscured by the destructive. Nather and Schinz, from large experimental material, have demonstrated the fallacy of the "irritation" dose.

The belief that every carcinoma can be destroyed by a dose of 90–110 per cent. of the skin dose (H.E.D) is no longer current. Failure was at first explained on the theory that some part of the growth must have received an "irritation" dose; then, when the refractory nature of certain tumours was obvious, the dose was considerably increased, with serious internal injuries as a sequel. We know now that the "irritation" dose does not exist. Further, instances of the successful cure of carcinomata by doses much in excess of the "carcinoma" dose prove that the specific "carcinoma" dose does not exist. Fischer says that carcinoma is a generic term for a class of tumours insufficiently classified, containing widely different types. These types differ in radio-sensitivity. Some will disappear after receiving 50–70 per cent. (H.E.D), others require 400–500 per cent. Martin, for epithelioma, gives 150–500 per cent., and Kummer gives 300–500 per cent. spread over ten days.

I have had the opportunity of observing the excellent results of treatment of epithelioma obtained by Rapp at the Samariterhaus, Heidelberg, using the "step-up" filter method. Introduced by Ghilarducci, the technique is essentially as follows:—

> The affected area is treated through a localiser, receiving on the first day 100 per cent. unfiltered, on the second day 100 per cent. filtered through 1 mm. aluminium, on the third day 100 per cent. through 2 mm. aluminium, on the fourth day 100 per cent. through 3 mm. aluminium, on the fifth day 100 per cent. through 0·5 mm. zinc. Allowing for modification to suit any given case the patient may receive a dose up to 500 per cent.

The results in epithelioma and lupus carcinoma are striking. Lupus carcinoma, incidentally, is common in Germany, a fact ascribed by Rapp to previous treatment of the lupus by X rays.

Granted then that the carcinoma dose does not exist and that different carcinomata possess a different degree of radio-sensitivity, the question now arises: Can the histological nature of a tumour serve as an index of its radio-sensitivity? Ulman thinks that squamous epitheliomata relapse after small or large doses of X rays, but that basal-cell carcinomata hardly ever relapse or give rise to metastases, however the dose may be varied. This view is opposed by S. and I. Forestier, who maintain that histological character does not influence radio-sensitivity to gamma radiation, basing their opinion on some cases of cancer of the cervix uteri.

*In former times the radio-sensitivity of cells* was believed to be a function of the degree of activity of cell metabolism and of the stage of differentiation—propositions inherent in the law of Bergonié and Tribandeau. We owe to Mohr, Holthusen, Lacassagne, Monod and Regaud the explanation that the effect of radiation upon a cell depends on a definite cytological stage; that in the testicle, for example, the vulnerability of the cell is at a maximum during cell division at the stage of equatorial arrangements of the chromatin meshes. This observation has been found to apply to normal cells and cancer cells alike, and Pordes has endeavoured to explain this upon *theoretical grounds*.

What practical inferences can we draw from these new points of view? First, that the law of Bergonié and Tribandeau is insolvent. Secondly, that the Wintz method is useless. This method, as is well known, consists in giving a total "carcinoma" dose during one séance, sometimes lasting 6–8 hours, with the idea of destroying all cancer cells at a stroke and giving them no chance of recovery. But fractional doses are now freely given without the least fear of provoking irritation, with the intention of influencing, at each irradiation, the cells which happen at that moment to be in the mitotic stage. Since the *exact time of this stage is unknown*, the irradiation times must be arbitrarily chosen. Forestier, in the hope of bringing some precision into this serious question, suggested his "index of karyokinetic activity," which represents the ratio of the number of cells in the division stage to those in the resting stage. The index so calculated determines the duration of application. Seth-Hirsch (New York) instead of using fractional doses keeps the tumour under continual weak action of X rays for eight days, calculating to reach the limit of tolerance only at the end of a week.

The old principles and views on which Rontgen-therapeutics *were formerly based are thus to be found* inadmissible and are being replaced by new theories, not yet assured of general acceptance, nor sufficiently well established for translation into terms of practice. The results of practice remain much the same; a complete cure cannot be promised, and radical surgical operation, whenever possible, remains the method of choice. To radiology there remains the field of prophylactic irradiation and of inoperable cases.

I have now outlined the causes which account for the deep pessimism which is general among Rontgen-therapists. Levy-Dorn jestingly states that radiotherapy can claim two successes—epilation and castration. Rapp thinks the method will probably be abandoned in favour of chemotherapeutics. What is the final destiny of radiotherapy it is impossible to foretell. The Russian poet, Poushkin, says: "A heavy hammer, breaking glass, forges a sword." Let us hope that the present period of transition will succeed in forging a sword which will deal the death-blow to one *of humanity's most cruel foes*—cancer.

I am, Sir, yours faithfully,

N. A. PODKAMINSKY, M.D.,

Administrator of the Rontgen Department of the All-Ukrainian Institute, Kharkow.

### *To the Editor of* THE LANCET.

SIR,—Duties in connexion with the national crisis prevented an earlier reply to the letter of Sir John Thomson-Walker in THE LANCET of May 1st. It is, of course, not to be expected that two parties looking at a problem from widely different angles should have similar views. Ever since I have been in a position to form any judgment it has been my view that in the treatment of any *disease* surgery must always be looked upon in the light of an expedient, pending the discovery of something better. It is not to the point that good results can be attained in certain cases of early malignant disease by operation. If the same result can be got by other means without removal of tissue, such means should be employed before any operation is attempted. The vast majority of patients dread operation, and if they can be cured without it *they will avoid a disturbance of physiological balance* which is an important factor in many cases. Radiology too is cheaper than surgery.

When Sir J. Thomson-Walker speaks of the hard rays in cancer having been for some time under careful trial in this country I should like to know where, when, and under what conditions the test was made. Whether surgery is at a "dead end," as I stated, is a matter of opinion, and I think I gave adequate reasons for mine. Regarding the "many serious risks" of hard rays to which he alludes, the fact is that his opinions are based on a different class of experience from my own. That there have been *disasters following on intensive X ray applications* I know probably as well as anyone—these are bound to happen while we are gaining experience in the use of any agent of equal power—and I have made it my business to investigate as far as possible every case that came to my notice. In some carelessness or incompetence or both were at work. Errors of judgment involving faulty technique, or the treatment of unsuitable cases, accounted for others, but I could find nothing reflecting on the system. If the technique is carefully carried out in early cases where the lesion is circumscribed and the general health not seriously impaired, then I am confident that radiology is without *the risks of operation and will achieve* as good or better results in a pleasanter way.

Sir J. Thomson-Walker takes exception to my having claimed "a high degree of success in the relatively few early cases of malignant disease that have been referred to me before there had been any surgical interference," and quotes the results in a few cases he was kind enough to send me. I was not thinking of these cases when I made that statement, and for the reason that I did not consider any one of them likely to be cured by any method at present known to us. If the prospect was so favourable why did not Sir J. Thomson-Walker deal with these cases himself? I can trace 15 *cases sent to me by him directly* or on his advice between August 14th, 1921, and Jan. 22nd, 1923. The ages vary from 55 to 81 with an average of over 62—a severe test for a method that depends for success on a reasonably normal vitality and recuperative power. Ten cases were malignant prostate, some with extensions to bladder, rectum, or glands. A few were complicated with an infection—a very fatal combination in my experience. It will be five years in August since the first, and three years last January since the last of these cases came into my hands. Does Sir J. Thomson-Walker wish to infer that a larger number of these cases would have been alive now if *(a)* they had been left alone, or *(b)* he had dealt with them himself by the usual surgical methods?

The fact is that the cases quoted differ in no degree from the usual type passed on to radiologists by surgeons with the further disadvantage of the age being unduly high. It would be difficult to find a more unsuitable series of cases on which to test the value of *any method of treatment, and it* is not open to anyone to say that the claims on behalf of the Erlangen system are extravagant until a proper test, under the conditions existing at its place of origin, has been made and found wanting. No such test has yet been made in this country.

I am, Sir, yours faithfully,

London, May 21st, 1926. REGINALD MORTON.

## EMETINE IN THE TREATMENT OF HEPATIC ABSCESS.

### *To the Editor of* THE LANCET.

SIR,—May I answer, very shortly, Colonel Thurston's letter in your issue of *April 10th, which I have*, unfortunately, only just seen. 1. My patient had declined operative interference. 2. He recovered. 3. Colonel Thurston relies on aspiration and emetine —in that order—but, in my opinion, he over-estimates the effect of aspiration and under-values that of emetine. I am, Sir, yours faithfully,

May 19th, 1926. V. S. HODSON.

## BACTERIAL INFECTION AND ACCIDENTAL HÆMORRHAGE.

*To the Editor of* THE LANCET.

SIR,—I wonder whether the "close relationship" found by Prof. F. J. Browne to exist between accidental hæmorrhage and toxic states[1] is really due to the "associated increased head of urea in the blood," or to the concomitant rise of general blood pressure. Accidental hæmorrhage, in its worst forms, seems to differ little from cerebral hæmorrhage in its worst form. On the post-mortem table the pregnant uterus, the seat of (concealed) accidental hæmorrhage, apparently differs but little from the brain in cases of extensive cerebral hæmorrhage (which is nearly always concealed). If a pregnant woman with slightly damaged kidneys eats unwisely at night, and in consequence twists and turns in bed, unable to sleep, the placental sinuses may give way, just as in the non-pregnant, with damaged cerebral arteries, a rupture under similar circumstances may occur. In the former case the placental sinuses give way unless they are sufficiently "supported"; their conservation depends on the intra-amniotic pressure. If this is maintained high, as in primigravidæ, accidental hæmorrhage is less likely; if it is on the average low, as in pregnant multiparæ, accidental hæmorrhage is more likely. 80 per cent. of the cases of eclampsia occur in primigravidæ; 80 per cent. of the cases of accidental hæmorrhage in pregnant multiparæ. It is a curious and interesting distribution.

Eclampsia and accidental hæmorrhage, it is stated, are both forms of the "toxæmia of pregnancy." THE LANCET, not so very long ago,[2] stated that in the former type there is no accumulation of nitrogenous waste products in the blood; to-day we read that in the latter type there is "an increased head of urea in the blood." But obstetric authorities (in the recent past) have suggested that the different forms of the various toxæmias of pregnancy depend in the presence or not, and in sufficient quantities, of respective antibodies. Eclampsia occurs because one type of antibody is not produced in sufficient quantity and accidental hæmorrhage because a different type of antibody is insufficient. These authorities must have missed the highly significant increase of the urea, &c., in the blood in the latter cases reported to-day in THE LANCET.

It is, however, curious that if a woman be the subject of chronic nephritis and become pregnant, that the pregnancy should advance near or quite to term; and that even the babe in some—indeed, in many—cases of accidental hæmorrhage, should be so well developed as appears. Prof. Whitridge Williams, in London, in April, 1925, reported a case of this type. From the photograph shown on the screen (of the uterus and babe in situ), the child appeared a normal full-time infant, well developed. The patient developed anuria from which she died. And in an annotation last week[3] you refer to the effect on the body (in the non-pregnant state) of diminishing the amount of kidney substance beyond a certain extent. If between 62 to 68 per cent. of the kidneys be removed, "the animal survives for a considerable time" . . . "the deciding factor between death and survival being whether the remaining portion of the kidney hypertrophies" or not. If the kidney is so essential to the individual, how in pregnancy can a well-developed babe be produced if the mother be the seat of chronic nephritis? How, then, can chronic nephritis be the cause of accidental hæmorrhage?

I submit we have got to look elsewhere. A "black" (pregnant) uterus may look like a "black" brain, but it also simulates a "black" eye, and may even have the same sort of pathology.

I am, Sir, yours faithfully,
R. H. PARAMORE, F.R.C.S. Eng.

Rugby, May 22nd, 1926.

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[1] THE LANCET, May 22nd, p. 988.

[2] Some Toxæmias of Pregnancy, THE LANCET, 1921, ii., 614.

[3] High Protein Diets and Renal Insufficiency, THE LANCET, May 22nd, p. 986.

## THE COUNCIL OF INDUSTRIAL MEDICINE.

*To the Editor of* THE LANCET.

SIR,—Of recent years there has been a steady increase in the number of large industrial concerns in this country employing medical men and women to advise their management regarding factory hygiene, the prevention of avoidable accidents, illness, and industrial diseases, and to assist in promoting the general well-being of the staff and workpeople. This increase, and the example set in America for some years past, led to the formation last year of "The Council of Industrial Medicine" as an association of British industrial physicians and surgeons. This Council already has over 40 members and meets regularly on the fourth Friday in each month at 12, Stratford-place, London, when discussions take place on the various problems confronting this comparatively new branch of preventive medicine. The Council is also the British section of the International Congress on Industrial Accidents and Diseases which held its fourth meeting in Amsterdam last autumn. It is hoped that the International Congress of Industrial Accidents and Diseases will at some future date hold a meeting in London. The actual date will be fixed by the International Committee.

The Council of Industrial Medicine is anxious to coöperate with all British medical practitioners (at home and abroad) who are specially engaged in industrial medicine. The executive are well aware that there are still a number of medical practitioners in Great Britain giving general or special medical services to industrial concerns with whom so far it has not succeeded in getting in touch, and will be grateful if any such will write to the Secretary, Council of Industrial Medicine, Federation of Medical and Allied Services, 12, Stratford-place, London, W. 1.

I am, Sir, yours faithfully,
D. A. COLES,
Chairman.

May 25th, 1926.

## IS LEUKÆMIA CANCEROUS?

*To the Editor of* THE LANCET.

SIR,—May I call your attention to certain facts which are a source of difficulty to humble followers of modern cancer research work. First, Ellerman and others have published many papers concerned with the transmission of leukæmia in the fowl. It can be transmitted by a cell-free filtrate. There seems to be no doubt now that it is typical leukæmia although it was formerly argued by some that it might be an obscure form of tuberculosis. Secondly, Rous, Gye and Barnard, and others have worked with another transmissible tumour which is a spindle-celled sarcoma and which has apparently no affinity with leukæmia. Thirdly, quite a number of others have worked with frankly non-transmissible tumours which everyone would admit to be cancerous.

In all three cases the work is sufficiently easy to follow because enough information is given about the original growth to permit of some idea of its nature. But there is another class of case in which doubts do arise. This class has long been known under a great variety of names—chloroma, lymphosarcoma, sarcomatosis, &c. Cases present apparent tumour formation in association with the generalised tissue and blood changes of leukæmia. I have not detailed references by me, but I have no doubt that many people would call such cases cancer and would base cancer statistics on them. Hastings Gilford seems to envisage the added tumour formation as being of the nature of a malignant change in the previously non-malignant leukæmia.

Now, although leukæmia may in one direction come very close to cancers, in the other it merges into a series of clinical pictures which seem to have little or nothing to do with cancer. And in all cases, including the lymphosarcoma or sarcomatosis type, it is sharply divided from cancer *by being at its inception a generalised disease.* Cancer is at its inception strictly localised. There is a further hint of some fundamental difference in nature in the fact that a sarcoma of bone, for instance, will expand and thin out the bone over it which a leukæmia marrow will never do, and in the fact that sarcoma impairs the function of an organ to the extent of its involvement of that organ, whereas a whole organ—e.g., a kidney—may be pervaded with leukæmic growth and yet suffer no perceptible impairment of function.

Other differences might be cited, and even if experts may not consider them conclusive there is no question but that they raise doubts which ought to be settled. If any part of modern cancer research is being based on what is in fact leukæmia, conclusions arrived at are ipso facto suspect until the above-mentioned disparities are explained and harmonised. No one seems to have thought it worth while to attempt such explanation and précis writers often fail to mention what sort of growth is being dealt with. It follows that readers are involved in difficulties and are inclined to doubt the propriety of endowing cancer research without any definite decision as to what constitutes cancer.

I am, Sir, yours faithfully,
GORDON WARD.
Sevenoaks, Kent, May 16th, 1926.

# Obituary.

## JOHN HEDLEY CROCKER, M.D., D.S.Sc.Vict.

ON May 17th Dr. J. H. Crocker died suddenly at Brighton, where he had been living for some years in retirement. He was 67 years of age. Born of a West Country family he was brought up in Tavistock and came to London to study medicine at Charing Cross Hospital, where he distinguished himself as a student and held house appointments. After voyages to China and Japan as ship's surgeon, he went to Eccles to take charge of a Friendly Societies' Medical Association, but soon afterwards took up private practice in the town and made a name for himself as a very able practitioner who took a great deal of trouble over his cases. Dr. Crocker had qualified as M.R.C.S. Eng. in 1884. In 1892 he graduated with first-class honours in the Victoria University and two years later, whilst in private practice, took the M.D. at Victoria University and also the diploma in Sanitary Science. This was followed by his appointment to the public health service. In general practice, his tact and charm of manner and his remarkable gift for winning the confidence of his patients had been immense assets, and also his aptitude for conveying to patients in non-technical language an accurate idea of their condition. These qualities of mind and character stood him in equally good stead when, partly for health reasons, he turned to administrative work. He became successively medical officer of health for Eccles, and for the new Manchester Port after the opening of the Ship Canal, and finally went to Richmond, Surrey, where, in spite of a serious operation and poor health, he carried on his work with keen interest. Even when he retired to Brighton he did not lose touch with everyday affairs, and he seemed to have several years of useful and well-earned retirement before him; as a member of the East Sussex County Council his advice and knowledge of public health were in constant demand. In each of the communities which he served during his life Dr. Crocker won a high reputation, and many colleagues will remember him as a good friend, always ready to do a good turn to others, and with a capacity for enlivening the occasion. He leaves a widow and one child.

## HENRY BROUGHAM GUPPY, M.B., C.M. EDIN., F.R.S.

THE death of Dr. H. B. Guppy at Martinique on April 23rd, at the age of 72, brings to an end a long career of scientific observation and investigation. The son of the late Dr. T. S. Guppy, of Falmouth, he was educated at King's School, Sherborne, and at Queen's College, Birmingham, proceeding to St. Bartholomew's Hospital, and the University of Edinburgh for his medical training. Graduating in 1876, he entered the Naval Medical Service, and was sent out to the Far East; it was as surgeon of a surveying schooner in the Western Pacific that he laid the foundations of his scientific work. Whilst engaged in oceanography he made use of his opportunities to study the formation of coral reefs in the Solomon Islands, and on leaving the Navy in 1885 devoted his attention to this branch of natural history. In 1887 he investigated coral reef formation in the Keeling Islands and Western Java, and his interest was attracted at this time towards the problems of plant dispersal, which mainly occupied his later years. On this and similar subjects he made many shrewd notes and deductions, and in recognition of his work on the geographical distribution of animals and plants, he received the gold medal of the Linnean Society in 1917 and was elected F.R.S. in the following year. Dr. Guppy was a man of an intensely inquiring turn of mind, and a good illustration of his ability to do valuable work wherever he happened to be is found in a contribution[1] to the *Proceedings* of the Royal Physical Society of Edinburgh, in which he describes a mass of observations on changes of temperature in the small and large rivers and ponds in the immediate neighbourhood of Kingston-on-Thames, and indicates their importance to the flowering and propagation of plants. As an author he will be chiefly remembered for three books: "Observations of a Naturalist in the Pacific" (1906), "Studies in Seeds and Fruits" (1912), and "Plants, Seeds, and Animals in the West Indies and Azores" (1917). Each of these contains a wealth of information invaluable to the student of plant geography, and it is in the last of them that Dr. Guppy develops his differentiation theory, according to which the restricted biologic groups represent derivatives of cosmopolitan types differentiated in correspondence with the integration of environment, and especially climatic environment. Several other books also reflect his wide interests and thoughtful mind.

Dr. Guppy was twice married, but leaves no children. He lived at Fowey in Cornwall.

## THE LATE MR. HUGH BRAUND KENT.

MR. H. B. Kent, who died at Tongshan on Nov. 24th last, was a man of considerable ability, and, although only 43 years of age, had distinguished himself in North China as a surgeon. We are indebted to Dr. John Fawcett for the following particulars of his career and work.

Hugh Braund Kent was the fourth son of Mr. Horace Kent, barrister-at-law, of Cholsey Mill, near Wallingford, Berkshire, and was educated at Oxford High School. Entering Guy's Hospital in 1904, he became popular amongst his contemporaries and proved his merit as a student. In 1908 he graduated in medicine in the University of London and was appointed clinical assistant at Guy's in the following year. Circumstances, however, compelled him to enter some kind of practice and to forego the house appointments which would have followed. In 1909 he left hospital and accepted a post in the Colonial Service in West Africa; in the following year he went to Tongshan as principal medical officer of the Kailan Mining Administration and the Chinese Peking-Mukden Railway.

When Kent took over this work in July, 1910, there was a hospital for foreign residents and for the

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[1] Vol. xii., 1894.

Chinese at Tongshan, but it was by no means fully equipped for the practice of modern medicine and surgery. By the time of his death last year the hospital had undergone a great change; it had been greatly extended and thoroughly fitted out for work of almost every kind. To effect such an improvement the coöperation and support of his employers were, of course, essential, but it was Kent's initiative, perseverance, and recognised ability which ensured that they were freely given. In his relations with the Chinese he was remarkably successful, and he so won their confidence as even to overcome their prejudices against surgical operation. The money required for the hospital's X ray apparatus was subscribed mostly in small sums by the Chinese themselves.

Fifteen years is a short time in which to establish a reputation as a first-class surgeon, and yet Kent did it in spite of grave disability at times from ill-health. For the last 13 years of his life he suffered recurrences of illness bad enough to render many men permanent invalids; but his ill-health seemed only to brace him to renewed activity. In 1919 he obtained leave to come home and work for the degree of M.S. Lond. and again in 1923 for the diploma of F.R.C.S. Eng. In both of these examinations he was successful.

"The value of a man's life," writes Dr. Fawcett in an appreciative note, "is measured not in length of days, but in what he accomplishes in the short space allotted to him. and in that sense Kent kept the measure filled to the brim. Nevertheless, his friends here and in China cannot cease to deplore the fact that he died so young and withal so full of promise for the future; happily he ripened early and lived long enough to reap some of his sowing, although the full harvest was never garnered. . . . He had the true surgical instinct, the keen eye and sure hand, and the confidence based on knowledge; he possessed the mind and will to overcome difficulties, the inability to recognise defeat. In fact, he was the very type of Englishman eminently fitted for the pioneer work he undertook in a foreign country—work which redounded not only to his own credit, and incidentally to that of his parent medical school of which he was so fond, but at the same time was of incalculable benefit to his fellow creatures in that great and far continent of China to which he devoted the best years of his short life."

### JAMES MACDONALD, M.D. EDIN.

Dr. J. Macdonald, who died on May 10th at Carlisle in his 70th year, had a large practice in the city. He was born in Edinburgh and educated at the Edinburgh Royal High School and at the University, where he took his M.A. degree before he was 18 years of age. In 1881 he graduated in medicine and worked as assistant to doctors in Newcastle and Manchester before going to Carlisle in 1884. Some two years afterwards he entered practice on his own account, and his services were in such demand that his work soon became very heavy. In 1895, however, he found time to write a thesis on diphtheria which gained him the M.D. degree and was commended. For about 40 years, moreover, he was medical officer to the Carlisle Fever Hospital and he held a number of other public appointments in the neighbourhood, including that of medical officer to the Carlisle Rural District Council. Before the Insurance Acts came into force he also served the Sick Society carried on by the workers at Messrs. Carr's factory, and since 1917 he had been chairman of the Cumberland Panel Committee. He was also deeply interested in the work of the British Medical Association. Many kinds of sport found in him an active supporter, and one who had knowledge as well as enthusiasm; he played Rugby football for his school and university. Dr. Macdonald was twice married and leaves a widow and two sons, one of whom is likely to carry on his father's practice. Another son was killed during the war.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. R. F. Clark is placed on the Retd. List with the rank of Surg. Rear Adml.

Surg. Lt.-Comdr. H. B. Padwick to be Surg. Comdr.

Surg. Comdr. A. R. Davidson is placed on Retd. List with rank of Surg. Capt.

J. M. Sloane to be Surg. Lt.

Lt. W. H. Mobley is placed on Retd. List.

### ROYAL NAVAL VOLUNTEER RESERVE.

Prob. Surg.-Lt. R. W. H. Tincker to be Surg. Lt.

## ROYAL ARMY MEDICAL CORPS.

Maj. J. W. C. Stubbs is restd. to the estabt.

Capts. R. A. Flood, C. C. Jones, J. Rowe, and H. C. D. Rankin to be Majs.

The undermentioned are restd. to the estabt.: Maj. R. G. Meredith, half-pay list, late R.A.M.C.; Capt. C. Armstrong, half-pay list, late R.A.M.C.

Temp. Lt. A. L. Moorby relinquishes his commn.

### ROYAL ARMY RESERVE OF OFFICERS.

Lt.-Col. R. A. Cunningham, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

### MILITIA.

Capts. H. C. G. Pedler, E. S. Rowbotham, and J. Melvin to be Majs.

### TERRITORIAL ARMY.

Capts. A. M. Johnson and C. A. Webster to be Majs.

Capt. H. L. Barker (I.M.S., retd.) to be Capt.

M. L. Sutcliffe to be Lt.

The King has conferred the Territorial Decoration upon the undermentioned officers: Lt.-Cols. A. W. Moore and P. H. Mitchiner; Majs. W. F. Denning, H. E. S. Richards, and A. L. S. Tuke; and Capts. (Maj. Prov.) H. Pinto-Leite and A. C. M. Savege.

## ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers for three years on the Active List: R. J. I. Bell, R. G. Freeman, and D. Oliver (who is seconded for employment at the Hull Royal Infirmary).

Flight Lt. M. Coghlan relinquishes his temporary commission on ceasing to be employed.

Flight Lt. D. McLaren is promoted to the rank of Squadron Leader.

## INDIAN MEDICAL SERVICE.

Majs. J. Taylor, A. D. Stewart, R. A. Chambers, R. H. Bott, J. Morison, S. G. S. Haughton, A. S. Leslie, J. F. James, A. P. G. Lorimer, H. B. Scott, G. McG. Millar, H. H. Thorburn, F. H. Salisbury, and C. R. O'Brien to be Lt.-Cols.

The King has approved the retention of the temp. rank of Capt., on perm. appt. to the I.M.S., as Lt. by E. T. N. Taylor.

The King has approved the retirement of Lt.-Col. G. E. Stewart.

Col. A. N. Fleming, A.D.M.S., Sind-Rajpatana District, has been appointed Honorary Surgeon to the King, in succession to Col. P. Dee, retd.

Maj. J. S. S. Martin, Indian Station Hospital, Multan, officiates as Deputy Assistant Director of Medical Services at Army Headquarters, vice Maj. G. R. Lynn, on leave. Maj. A. F. C. Martyn to be Specialist in Dermatology, Rawalpindi district, vice Maj. W. B. Rennie, vacated. Capt. C. G. G. Keane to be Specialist in Otology, Eastern Command, vice Capt. C. H. C. Byrne. Capt. G. A. Hildreth to be officer in charge, Brigade Laboratory, Bynnu, vice Lieut. K. M. Bharucha.

## DEATHS IN THE SERVICES.

Lieut.-Colonel Lewis Allen Irving, O.B.E., A.M.S., retd., who died on May 15th, aged 76, at 22, Westgate-terrace, S.W., was the youngest son of the late Major-General Alexander Irving, R.A. Educated at Dublin and in Germany he entered the Service as assistant surgeon in 1871, becoming lieut.-colonel after 20 years' service, and retiring in 1896. He saw service in South Africa and India, and was commandant of the Military Lunatic Hospital, Netley. Later he became a medical officer for recruiting in the London district, and on the outbreak of war was engaged in the relief of Belgian refugees. For his services he received the O.B.E. in 1918, and the Belgian Order of Leopold. After the war he interested himself in the Chelsea branch of the Incorporated Soldiers' and Sailors' Help Society and the Emergency Help Fund of the British Red Cross Society.

Ex-Service Men in Asylums.—The annual report of the British Legion for 1925 states that there are still more than 6200 ex-officers and men in mental institutions, and a further 390 in the Border-line Hospital at Ewell.

The late Dr. R. W. Wilson.—Dr. Reginald William Wilson, who died on May 6th, was for 37 years medical superintendent of the Croydon Union Infirmary. He received his medical education at St. Mary's Hospital, qualifying as M.R.C.S. Eng. in 1882 and L.R.C.P. Edin. in 1884. At 28 years of age he was appointed the first medical superintendent by the Croydon Guardians. He leaves a widow and two sons.

Rates on Hospitals.—The important Royal Infirmary at Cardiff and its branches have hitherto been assessed to local rates on a nominal basis. The assessment committee have just lowered the assessment still farther, the total of £434 being reduced to £170.

North-Western Tuberculosis Society.—Sir Robert Jones will read a paper at the Medical School, the University, Manchester, at 3 p.m. on Friday, June 4th, entitled Some Notes on the Treatment of Tubercular Joints. All medical practitioners who are interested are cordially invited.

Queen Charlotte's Maternity Hospital.—Arrangements have been made at Queen Charlotte's Hospital, Marylebone-road, London, for the accommodation of an increased number of medical students and practitioners, who can now be received at short notice for courses in practical midwifery.

The late Dr. W. Stamford.—Dr. William Stamford, who died on May 6th at the age of 84, was a Cambridgeshire man by birth. He studied at the Middlesex Hospital and qualified as M.R.C.S., L.R.C.P. in 1871. Nearly 60 years ago he settled in Tunbridge Wells and for 30 years was medical officer of health. In 1911 he resigned this post but continued in private practice, temporarily resuming his public work during the absence of his successor on military service in 1916. In 1912 he was elected to the town council which he served loyally until two years ago, when he had to give up the work owing to ill-health. For three years his health had been failing. Both in a public and private capacity he did good work for his town, and his interest in medical matters was shown by contributions to medical journals. He leaves a widow.

Salford Coroner Adopts New Procedure.—Mr. A. Howard Flint, the deputy Salford coroner, opened an inquest on May 14th on a woman who died on May 11th. A young woman in custody was charged on suspicion of having caused the death. Mr. Flint adjourned the case after taking evidence of identification and the doctor's statement. He said that this was an entirely new procedure in Salford, and explained that in a Bill before Parliament dealing with the holding of inquests there was a provision enabling coroners, where a person was in custody charged with murder, manslaughter, or infanticide, to postpone an inquest pending the result of criminal proceedings. Such a course, he said, obviated the duplication of evidence, and saved witnesses unnecessary inconvenience. It was also fair to an accused person, who would not be prejudiced by anything that occurred in a coroner's court. Although the measure had not yet become law, he proposed to take the responsibility of adjourning the case until after the hearing before the magistrates.

Sir William Osler Memorial Volume.—This memorial publication has just been issued under the auspices of the International Association of Medical Museums. It is an attractive volume containing 630 pages of memorial articles and bibliographic annotations with over 100 fine illustrations. Forewords have been written by Prof. William H. Welch and by the late Sir Clifford Allbutt, and the volume contains a large series of reminiscences and appreciations written by over 100 colleagues, friends, and pupils. Following this biographical and memorial section is a classified and annotated bibliography of Sir William Osler's publications, the work of several collaborators, which reveals Osler's many-sided activities and constitutes a source of reference alike to the research worker and medical historian. The book is completed by a full bibliography of writings about Osler. The volume has been privately published and is now available at the subscription price per copy of $10, or £2. Cheques should be made payable to the International Association of Medical Museums (Osler Memorial Number), and may be forwarded to Dr. Maude E. Abbott, Managing Editor, Osler Memorial Number, McGill University, Montreal, Canada, or to Sir Humphry Rolleston, Southfield, Trumpington-road, Cambridge.

Hull Royal Infirmary Extension.—Mr. Philip Reckitt has given the East Mount Estate of 50 acres as the site for the proposed annexe to this hospital.

The late Dr. W. Bryce.—On May 13th Dr. William Bryce, of Glasgow, died suddenly whilst walking in the street. He was 60 years old and had been in practice in the east end of Glasgow for nearly 30 years. In 1889 he graduated in medicine at the University of Glasgow and proceeded to the M.D. degree two years later. He was medical officer to the Glasgow Parish Council and had held a Territorial commission as lieut.-colonel in the R.A.M.C.

Lebanon Hospital for Mental Diseases.—The twenty-seventh annual meeting of the Lebanon Hospital, which is established at Asfuriyeh, Beyrout, Syria, will be held at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Tuesday, June 1st, at 4.30 p.m. (Tea at 4 p.m.) Dr. E. W. G. Masterman will preside, and all who are interested will be welcome. Particulars of the work of the Lebanon Hospital may be had from the general secretary, Miss Hilda Fox, at 67, High-street, Marylebone, London, W. 1.

Royal Sussex County Hospital.—This hospital is now more than 100 years old, and at a meeting of the governors on May 18th it was decided to adopt a scheme for bringing it up to date, which will involve the expenditure of £25,000. The existing nurses' home is to be extended; new quarters are to be provided for the domestic staff, and the present operating theatres, which were put up 25 years ago, are to be enlarged. About 1500 major operations are now done during the year. Structural alterations are to be made which will increase the number of beds by 50 or 60. At present accommodation is altogether deficient; there is a waiting list of 130, and too few beds are available against emergency. A county meeting will probably be held and an appeal launched. At the governors' meeting the President, Lord Leconfield, paid a tribute to the work of volunteers who helped the hospital to carry on during the strike.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### *Whitsuntide Ajournment.*

The House of Commons adjourned for the Whitsuntide recess on Thursday, May 20th. They will reassemble on Tuesday, June 1st.

## HOUSE OF COMMONS.

### Tuesday, May 11th.

### *War Pensions Administration.*

The House went into Committee of Supply on the Civil Service Estimates, Mr. James Hope, chairman of committees, in the chair.

On a vote to complete the sum of £63,501,900 for salaries and expenses of the Ministry of Pensions for the current year 1926–27,

Major Tryon (Minister of Pensions) said that the vote before the Committee would bring the total expenditure on war pensions up to the end of the present financial year to £725,176,986. This was the largest expenditure on war pensions made by any of the countries engaged in the Great War. The cost of administration was £1,962,900, which showed a reduction of £404,700 on last year. Ninety-seven per cent. of the money voted was spent in direct benefit to the pensioners. The number of men medically examined had fallen off greatly. In the six months ended Dec. 31st, 1922, 279,701 men were examined by medical boards; in the same six months of 1925 the number had fallen to 63,000. The staff employed in the daily work of the Ministry had declined in numbers more rapidly than the total expenditure. In 1922 the Ministry were employing 92,000 persons; on March 31st of the present year the staff had fallen to 11,358, including 3000 staff employed in the hospitals of the Ministry. Of the total male staff 97 per cent. were ex-Service men, and nearly 60 per cent. were men who had been in some degree disabled by war service. Referring to the effects of the general strike, Major Tryon said that the facilities for reaching hospitals and clinics or attending for medical examination had, of course, been affected, but he had made arrangements for providing transport where it was essential, and he was glad to say that the food supplies to the Ministry hospitals had worked satisfactorily. Changes in local administration, which had been in process for two or three years, were now being brought to completion. These changes included the closing of the regional offices and the disappearance of the advisory councils associated with them. It was his intention to make the War Pensions Committees and the Central Advisory Committee at the headquarters of the Ministry as effective as possible in coöperation with the official administration.

He and Lieut.-Colonel Stanley, the Parliamentary Secretary to the Ministry, had visited the area offices in more than one-third of the country and had discussed with the chairman of the War Pensions Committee and the responsible medical officers and the chief area officers and their assistants the practical working of many branches of local administration. They found that generally everything was working smoothly and satisfactorily. Steps were being taken to meet practical difficulties where they occurred. The expenditure on medical services was estimated for the current year at £3,141,000, a decline of £317,000 on the previous year. The decline was due (1) to the fact that fewer men were asking for, or were being required to undergo, medical examination for pension purposes, and (2) to the medical and surgical treatment required by disabled officers and men steadily and quite naturally becoming less. The number of in-patients maintained on the charge of the Ministry was 15,000. During the past year 10 institutions belonging to the Ministry, or at their disposal, were closed, leaving 53 hospitals in working order at the present date The largest item in the Ministry's expenditure—the cost of pensions and cash benefits of all kinds—accounted for £58,772,900 for the current year. This was a decrease of £3,177,000 on the previous year. At present, out of the whole body of a million adult beneficiaries of the Ministry, there were 750,000 disabled officers and men, widows, and adult dependents who were in receipt of final awards or other forms of life pension, and for whom practical stability of tenure as pensioners had been secured. Less than 200,000 officers and men were in receipt of conditional pensions.

Progress was reported.

### THURSDAY, MAY 20TH.

### *Education of Semi-mentally Deficient Children.*

Colonel DAY asked the President of the Board of Education what arrangements now existed for the education of semi-mentally deficient children in England and Wales.—The DUCHESS OF ATHOLL replied: My right hon. friend assumes that the hon. Member is referring to the children who are educationally retarded but are not certifiable as mentally defective. Provision is made by an increasing number of local education authorities for the education of such dull and backward children in special classes on the general lines indicated in paragraph 14 of Circular 1341.

### *Sanitary Condition of Offices.*

Lord HENRY CAVENDISH-BENTINCK asked the Minister of Health whether the attention of local authorities had been directed by his department to the judgment in the case of Bennett v. Harding (1900), as to their power to inspect offices and insist on their sanitary condition; and, if not, whether he would consider the desirability of doing so—Mr NEVILLE CHAMBERLAIN replied: Yes, Sir, the attention of local authorities was drawn to this judgment in a Home Office memorandum of 1912. The judgment does not expressly refer to offices, and it may be well to have a test case to make the position clear

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 15TH, 1926

# Medical Diary.

## SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, May 31st.—5.30 P.M., ODONTOLOGY, Clinical Meeting, followed by the Annual General Meeting: Election of Officers and Council. At this meeting it is proposed to make a presentation to Sir Frank Colyer in recognition of his devoted services as Hon. Curator of the Museum for the past 25 years.

TUESDAY, June 1st.—5.30 P.M., MEDICINE. Annual General Meeting. Dr. P. J. Cammidge: Pituitary Glycosuria. Dr. O. Leyton: Hypoglycæmia.

WEDNESDAY.—5 30 P.M., GENERAL MEETING OF FELLOWS. Sir Jagadis Bose: The Action of Alkaloids and Cobra Venom on the Pulse of the Plant and Animal. 8.30 P.M., SURGERY. Dr. W. E. Gye. The Origin of Tumours. Mr. J. E. Barnard will give a demonstration on microscopical methods.

THURSDAY.—Summer Meeting. 3 P.M., LARYNGOLOGY. Sir William Willcox: Nasal Sinusitis as a Cause of Toxæmia. (Members are requested to send cases bearing on the paper not later than 2.30 P.M.) Dr. A. Logan Turner and Dr. F. E. Reynolds: A Fatal Case of Leptomeningitis following Operation on the Ethmoidal Air Cells: with Microscopical Demonstration of the Path of Infection. Epidiascopic Demonstration: Dr. W Jobson Horne: The Rôle of the Lymphatics in Laryngeal Disease, and the Rôle of the Larynx in Lymphatic Disease.

FRIDAY.—Ordinary Clinical Meeting at 10.30 A.M. (Cases at 9.30 A.M.), LARYNGOLOGY. Cases and Specimens will be shown by Mr. Lawson Whale, Dr. D. R. Paterson, Mr. Bell Tawse, Mr. Douglas Guthrie, and others. 3 P.M., OTOLOGY: Summer Meeting Prof. W. E. Dixon: The Permeability of the Choroid Plexus to Certain Constituents of the Cerebro-Spinal Fluid. Dr A. A. Gray: A Hitherto Undescribed Structure in the Bird's Labyrinth.

SATURDAY.—OTOLOGY: Summer Meeting (continued). 10 30 A.M. (Cases at 9.45 A.M.) Dr. W. H. Hartridge: The Fundamental Experiments on which the Resonance Theory is Based. Cases will be shown by Mr A. H. Cheatle, Mr. W. M. Mollison, Mr. Alex. Tweedie, Mr. M. Vlasto.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 31st, to SATURDAY, June 5th.—Special afternoon demonstration in clinical surgery on Monday, at the Royal Northern Hospital, by Mr. F. D. Saner at 2.30 P.M.—Special demonstration in clinical ophthalmology on Thursday, by Mr. Hepburn at the Royal London Ophthalmic Hospital at 12.45 P.M. These demonstrations are open to all members of the medical profession without fee.—CHILDREN'S CLINIC, [illegible] street, Marylebone road, N.W. Special course [illegible] diseases of children at various Hospitals and [illegible] consisting of demonstrations and lectures [illegible] and afternoon sessions as per programme.—[illegible] HOSPITAL, Denmark Hill, S.E. Special [illegible] Psychological Medicine now in progress [illegible] owing to strike. Daily clinical instruction [illegible] dealing with various aspects. Further [illegible] from the Secretary of the Fellowship of [illegible]

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, May 31st.—10 A.M., Surgical [illegible] W. E. Tanner. 10 30 A.M., Gynæcological [illegible] Mr. A. E. Giles. Throat, Nose and Ear [illegible] Mr W. Ibbotson. 2 P.M., Medical, [illegible] and Gynæcological Clinics Operations [illegible] Demonstration of Cases in the [illegible] H. W. Carson. 6.30 P.M., [illegible]

TUESDAY, June 1st —2 P.M., Medical, [illegible] and Ear Clinics, Operations. [illegible] The Diagnosis and Treatment [illegible]

NATIONAL HOSPITAL, Queen-square, Bloomsbury, W.C.

TUESDAY, June 1st.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: The Surgery of Compression Paraplegia.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disseminated Sclerosis.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Collier: Aphasia.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES, Quay-street.

THURSDAY, June 3rd.—4.30 P.M., Dr. Marianne Peach: Lupus Erythematosus.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, June 4th.—3.30 P.M. (at the Royal Hospital), Dr. G. Simpson: Treatment of Fractures.

## Appointments.

CADDY A., M.D. Lond., F.R.C.S. Eng., has been appointed Ophthalmic Surgeon to the Royal National Orthopædic Hospital, Great Portland-street.

Certifying Surgeons under the Factory and Workshop Acts: BUTTAR, F. L., M.B., Ch.B. Edin. (Salisbury); BAISS, L. A., M.R.C.S., L.R.C.P. Lond. (Swanage); MACKENZIE, J. M., M.B., Ch.M. Aberd. (Newport, E. Riding); KERR, A. E., M.B., Ch.B. Cantab. (Petworth).

## Vacancies.

*For further information refer to the advertisement columns.*

*Acton Hospital.*—Res. M.O. £150.

*Birkenhead Education Committee.*—Asst. M.O. £600.

*Bolton Union, Townleys Hospital.*—Med. Supt. £900. Second Asst. M.O. £225.

*Bournemouth Convalescent Home.*—Asst. Med. Supt. £200.

*Brighton, Royal Sussex County Hospital.*—H.P. £150.

*Bristol, Cossham Memorial Hospital, Kingswood.*—Res. M.O. £150.

*Bristol Eye Hospital.*—Hon. Consulting P.

*Bristol General Hospital.*—Hon. Clin. Assts.

*Cambridge, Addenbrooke's Hospital.*—H.S. and H.P. Each at rate of £130.

*Cambridge University, Pathological Laboratory.*—John Lucas Walker Studentship. £300.

*Cardiff Royal Infirmary.*—H.S. for Ear, Nose and Throat Dept. £50.

*Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.*—Res. H.S. £75

*Charing Cross Hospital.*—Asst. Phys. to Skin Dept.

*Chelsea Hospital for Women, Arthur-street, S.W.*—Jun. H.S. At rate of £100. Also Sen. H.S. At rate of £120.

*Cheshire, Joint Sanatorium, Market Drayton, Salop.*—H.P. £250.

*City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.*—H.P. At rate of £100.

*Coventry and Warwickshire Hospital, Coventry.*—Fourth H.S. £125.

*Cumberland County Council.*—Asst. County M.O.H. £600.

*Derbyshire Education Committee.*—Two Asst. School M.O.'s. Each £600.

*Derbyshire Royal Infirmary, Derby.*—Venereal Dis. O. £750.

*Dreadnought Hospital, Greenwich.*—Phys.

*Durham County Council, Education Department.*—Asst. School M.O. £600.

*Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.*—Asst. P.

*General Lying-in Hospital, York-road, Lambeth, S.E.*—Res. M.O. At rate of £100.

*Glasgow, Lightburn Joint Hospital, Shettleston.*—Res. M.O. £350.

*Great Yarmouth General Hospital.*—H.S. £150.

*Hampstead, General and North-West London Hospital, Haverstock-Hill, N.W.*—Pathologist. £600.

*Hospital for Sick Children, Great Ormond-street, W.C.*—H.P. and H.S. Each at rate of £50.

*Hull Tuberculosis Sanatorium, Cottingham, E. Yorks.*—Res. M.O. £504 13*s.* 10*d.*

*Huntingdon Administrative County.*—Asst. County M.O. and Asst. Sch. M.O. £600.

*Leicester Royal Infirmary.*—H.S. At rate of £125.

*London Hospital, E.*—Hon. Asst. Anæsthetist. Also Hon. Anæsthetist.

*London Temperance Hospital, Hampstead-road, N.W.*—Res. M.O. At rate of £175.

*Manchester, Hospital for Consumption, &c.*—Hon. Asst. P.

*Mauritius Government Mental Hospital, Beau Bassin.*—Asst. Med. Supt. 7500 rupees.

*Metropolitan Hospital, Kingsland-road, E.*—Hon. Anæst. Also Ophth. S.

*Miller General Hospital for South-East London, Greenwich-road, S.E.*—Res. Cas. O. £150. H.S. £125.

*Oxford, Radcliffe Infirmary and County Hospital.*—H.S., Obstetric H.P. Each at rate of £120.

*Queen Mary's Hospital for the East End, E.*—H.P., two H.S.'s, Obstet. H.S., and one H.P., and Cas. O.

*Queen's Hospital for Children, Hackney-road, Bethnal Green, E.*—Cas. O. At rate of £100.

*Royal Northern Hospital, Holloway, N.*—Ophth. S.

*St. John's Hospital, Lewisham.*—Asst. S. in Ear, Nose and Throat Dept.

*Sheffield Royal Hospital.*—Sen. Cas. O. £150.

*South London Hospital for Women, South Side, Clapham Common, S.W.*—Asst. P.

*Stoke-on-Trent City.*—Asst. M.O. £500.

*Sudan Medical Service.*—Four M.O.'s. £E.720.

*Swansea Hospital.*—H.S. for Ophth. and Aural Depts. £200.

*Victoria Hospital for Children, Tite-street, Chelsea, S.W.*—Sen. Res. M.O. £250.

*West London Hospital, Hammersmith, W.*—H.P., H.S., Aural H.S., and Res. Cas. O. Each at rate of £100.

*Westminster Hospital, Broad Sanctuary, S.W.*—Asst. H.P. &c. At rate of £52.

*Winchester, Royal Hampshire County Hospital.*—H.S. At rate of £150.

*Windsor, King Edward VII. Hospital.*—Res. M.O. and Jun. H.S. At rate of £200 and £100 respectively.

The Secretary of State for the Home Department announces a vacancy for a Medical Referee under the Workmen's Compensation Act, for the Districts of the Doncaster and East Retford County Courts (Circuit No. 18). Applications from Surgeons should reach the Private Secretary, Home Office, London, S.W., not later than June 14th.

## Births, Marriages, and Deaths.

### BIRTHS.

ANDERSON.—On May 15th, at Rosemount, Bearsted, Kent, the wife of J. C. Anderson, M.D., of a daughter.

BANKS.—On May 16th, at Ty-Mawr, Aberdare, the wife of Harry Banks, F.R.C.S., of a daughter.

BLACKLEY.—On May 12th, at Ashton-on-Ribble, Lancashire, the wife of F. J. Blackley, M.D., of a daughter.

CLAPHAM.—On May 21st, at Madeley House, Park-road, Peterborough, the wife of Harold Clapham, M.R.C.S., L.R.C.P., of a daughter.

HEPPLE.—On May 20th, at Chelsea, the wife of Captain R. A. Hepple, M.C., R.A.M.C., of a son (prematurely).

RAISON.—On May 13th, at Prior's Croft, Sir Harry's-road, Edgbaston, Birmingham, the wife of Cyril A. Raison, F.R.C.S., of a son.

SEVERN.—On April 20th, at Hong-Kong, the wife of Dr. A. G. Millott Severn, of a son.

SHAW.—On May 10th, at Christ Church-road, S.W., the wife of Dr. J. G. Shaw, of a son.

STEWART.—On May 10th, at Dial House, Bourton-on-the-Water, Glos., the wife of Dr. R. B. Stewart, of a daughter.

### DEATHS.

AMSDEN.—On May 24th, at Lancaster-gate, Walter Amsden, M.R.C.S., F.R.G.S., aged 60.

CROCKER.—On May 17th, very suddenly, John Hedley Crocker, M.D., B.Ch., D.P.H., of "Kingswood," Surrenden-road, Brighton, late Medical Officer of Health for Richmond, Surrey.

DUTCH.—On April 30th, 1926, after a long illness, Major Henry Dutch, M.D., T.D., aged 64 years, at his residence, 8, Berkeley-street, W. 1, beloved husband of Minna N. Dutch and deeply loved father of Councillor Miss Hilda Dutch.

FRASER.—At Woodlands, Elderslie (the residence of his son-in-law), on the 19th inst., in his 86th year, Donald Fraser, M.D., F.R.F.P.S., late of Paisley and latterly of Connel Ha' Cothal, Aberdeenshire.

HARVEY.—On May 4th, at Hamilton, Bermuda, Eldon Harvey, O.B.E., V.D., M.R.C.S. Eng., L.R.C.P. Edin., in his 74th year.

HOWARD.—On May 19th, at the Mowle, Ludham, Norfolk, Arthur Dashwood Howard, M.D.

KEMPSON.—On May 10th, suddenly, Frederick Claude Kempson, M.B. Cantab., Vicar of St. Newlyn East, Cornwall, aged 58 years.

KENYON.—On May 20th, at St. Margaret's-terrace, John Edward Kenyon, M.R.C.S., L.R.C.P., aged 79.

PACKARD.—On May 21st, at Kedleston, the Rev. Henry Charles Packard, M.D., Rector of Kedleston, Derby, in his 70th year.

SHAW.—On May 3rd, at "The Leazes," Goodmayes, John Custance Shaw, Medical Superintendent, West Ham Mental Hospital, aged 59.

THOMPSON.—On May 18th, at Beaumont-street, Oxford, after a few hours' illness, Harold Thompson, M.R.C.S., L.S.A., aged 73.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

LEICESTER ROYAL INFIRMARY.—The annual report contains some interesting comments upon the influence of trade depression on workmen's contributions which, in this instance, show a slight falling off after years of consistent growth. Had it not been for the diversity of manufacturing interests in the city the financial uncertainty of the year would have been much greater. About 60 per cent. of the adult in-patients are members of approved societies which have granted support in relation to about 40 per cent. of their members treated in the hospital, and it is pointed out that if all approved societies with surpluses adopted hospital benefits the total contributions would yield some £7000 towards the £30,000 which the institution spends on the treatment of insured persons. A preponderating percentage of out-patients are members of approved societies which, however, make no return except by small annual contributions in a few instances.

# Notes, Comments, and Abstracts.

## THE DANGEROUS DRUGS ACTS.

### THEIR APPLICATION BY THE PHYSICIAN AND THE PHARMACIST.*

BY SIR WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P. LOND.,

PHYSICIAN TO ST. MARY'S HOSPITAL, LONDON.

ADDICTION to the "dangerous drugs" to which the special Acts relate is rare in Great Britain. I made this statement in the Norman Kerr memorial lecture in 1923, and the same conclusion was reached by the Departmental Committee on Morphine and Heroin Addiction, which issued its report in January of this year.

It is often asked: Why should all these troublesome laws and regulations be made to deal with a condition which is uncommon in the country? The answer is that "the Dangerous Drugs Acts" are the outcome of a profound international public opinion which for many years has been steadily growing.

#### *Movement to Restrict the Use of Dangerous Drugs.*

As long ago as 1788 Warren Hastings declared opium to be "a pernicious article of luxury which ought not to be permitted but for the purpose of foreign commerce only." and in 1817 the directors of the East India Company wrote that "if it were possible to prevent the use of the drug altogether, except strictly for the purpose of medicine, we would gladly do it in compassion to mankind."

In 1871 the British Society for the Suppression of the Opium Trade was formed with Lord Shaftesbury as its first president, and in 1893 a Royal Commission was appointed to consider the opium problem in India. Although, however, the gravity of opium addiction was fully realised by this Commission no active measures of importance resulted from its work.

The United States became directly concerned in the Far Eastern opium problem when the Philippine Islands were ceded to them by Spain in 1898, and the International Opium Commission of Shanghai in 1909 was largely the result of President Roosevelt's initiative. This was the first great step in dealing with the problem from an international standpoint. An attempt to carry the work a step further was made at the International Opium Convention at The Hague in December, 1911, and January, 1912, and a general course of action was agreed upon, to which the 14 countries coöperating gave sanction. It was not, however, to become effective until the other countries not participating had agreed, and a satisfactory result was delayed by the outbreak of the war.

The peace treaty of Versailles contained clauses leading to the ratification of the Opium Convention. Under the terms of the Convention the consenting nations agreed to frame Acts dealing with dangerous drugs, and in this country the Dangerous Drugs Act was passed in September, 1920, by which (section 7) power was given to make regulations to control the manufacture, sale, possession, and distribution of the drugs in question. Minor regulations and amendments were made, and in May, 1923, the Dangerous Drugs and Poisons Amendment Act was passed. In March of the same year a memorandum on the duties of doctors and dentists under the Act of 1920 was issued by the Home Office.

In July, 1916, under the Defence of the Realm Act, orders were made dealing with the sale of opium and cocaine which were similar in character to those of the Dangerous Drugs regulations of 1921, and in May, 1916, an Army Council Order under the same Act prohibited the sale of certain narcotic drugs to any member of H.M. Forces except in the dispensing of medical, dental, or veterinary prescription. This schedule of narcotic drugs included barbitone, codeine, Indian hemp, benzamine (i.e., eucaine), chloral hydrate, sulphonal, and their preparations and derivatives.

These war emergency regulations dealing with dangerous drugs and narcotics worked smoothly and satisfactorily, and their success paved the way to the issuing of the dangerous drugs regulations of 1921.

#### *Recent Developments in Great Britain.*

It will be interesting to note the further developments in relation to the Dangerous Drugs Acts, though these have not yet resulted in actual statutory regulations.

In April, 1923, a Departmental Committee, with Dr. Smith Whitaker as chairman, was appointed by the Minister of Health to investigate the value for therapeutic purposes of possible substitutes for cocaine and the risk of such substitutes becoming drugs of addiction. This committee has not yet issued its report, but very valuable original work has been done at Cambridge, which has resulted in the discovery of the borocaines. These are valuable substitutes for cocaine; they are much less toxic and it is believed that they will not give rise to addiction.

In September, 1924, a Departmental Committee, with Sir Humphry Rolleston as chairman, was appointed by the Minister of Health to inquire into morphine and heroin addiction, and specially to consider the circumstances under which these drugs may be supplied to persons suffering from addiction and the precautions necessary to avoid abuse. This committee issued its report on Jan. 21st, 1926. Its work has been of great value, since it has enabled the views of specially experienced members of the medical and pharmaceutical professions to be heard in detail and impartially considered and reported upon.

Not the least valuable part of the report is the definition of addict as "A person who, not requiring the continued use of a drug for the relief of the symptoms of organic disease, has acquired as a result of repeated administration an overpowering desire for its continuance, and in whom withdrawal of the drug leads to definite symptoms of mental or physical distress or disorder."

The committee pointed out the types of cases of addiction in which administration of morphine or heroin may be regarded as legitimate medical treatment. This relieves the physician and pharmacist of any possible suggestion of lack of care. *Consultations in certain cases* were recommended, and it was suggested that infringement of the regulations by medical men should be dealt with by a specially constituted medical tribunal as an alternative to a conviction in the courts. It was also recommended that in suitable cases the Home Secretary should have power to withdraw a practitioner's authorisation to prescribe dangerous drugs as well as to possess and supply them, and it was recommended that doctors who do not dispense should be required to keep a simple record of their purchases of dangerous drugs. The system of notification of addicts which exists in certain countries was given full consideration, and it was not considered desirable to recommend such a system for this country.

On Feb. 11th, 1925, at the first Opium Conference of the League of Nations, special recommendations were made which made the importation, sale, and distribution of opium a monopoly of the Government. On the 19th, at the second Opium Conference of the League of Nations, special recommendations were made whereby *all* preparations containing heroin of whatever strength and galenical preparations (tincture and extract) of Indian hemp should come under the operation of the Dangerous Drugs Act and Regulations. *The above recommendations have not yet been legalised* in this country.

#### *What are the Dangerous Drugs?*

As at present scheduled they are morphine, cocaine, ecgonine, heroin, and medicinal opium with their salts or preparations. Additions to these have been suggested.

*Codeine.*—Is this a dangerous drug? or, in other words, is its use likely to lead to addiction? In my opinion codeine should not be regarded as a dangerous drug. It is a drug which is taken almost always by the mouth, and is not administered hypodermically. In the course of an extensive toxicological experience I have never yet met with a case of codeine addiction. I have, during the past 25 years, frequently prescribed codeine, usually in combination with other analgesic drugs such as aspirin, phenacetin, or pyramidon for the relief of pain, and have never observed any signs of the development of addiction. The addition of codeine to the list would greatly restrict the use of a valuable remedy and would cause needless inconvenience and hardship.

Suggestions as to certain further additions to the list of dangerous drugs have been received from other countries. The *veronal group* of drugs—i.e., diethyl barbituric acid and other alkyl, aryl, or metallic derivatives of barbituric acid such as veronal, medinal, dial, proponal, luminal, and their preparations or compounds—are, in my experience, drugs which commonly lead to the development of addiction. They are toxic drugs and produce cerebral symptoms and an abnormal mental condition. Death from poisoning from the barbituric acid group of drugs is relatively common. A common sequel of veronal addiction is suicide from an overdose. I have seen a number of such cases. I am strongly of opinion that this group of drugs should only be supplied on medical prescription, and that the prescription should be retained by the pharmacist as in the case of the "dangerous drugs." In other words, Sections 5 and 6 of the Dangerous Drugs Regulations, 1921, *should apply to these drugs.* addition of a drug to the "Dangerous Drugs Regulati involves many more conditions other than those of two sections, and it does not appear necessary th other conditions should apply to the veronal group It would appear desirable that such restrictions as the sale of these drugs should apply as was the case during the war, without their actual inclusion under the Dangerous Drugs Act and all that that involves. The situation might be met by the framing of special regulations by the Pharmaceutical Society under Section 1 of the 1868 Pharmacy Act.

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* Abstract of an address to the conjoint meeting of the South-West London Medical Society and the South-West London Chemists' Association on May 5th, 1926.

*Heroin.*—It has been suggested that heroin should be abolished and its manufacture prohibited. Heroin has therapeutic effects which are not supplied by morphine or other drugs. Thus it is often more effectual in the relief of severe nerve pain. It does not cause constipation. In some cases where morphine is not tolerated, causing vomiting or excitement, heroin acts as a perfect hypnotic. For these reasons it is held that heroin should be retained as a therapeutic remedy. The dangers of addiction from its continual use must never be forgotten.

### *Illegal Trafficking in Dangerous Drugs.*

Illegal trafficking appears to be much less in this than in other countries. A certain amount of illegitimate sale of cocaine and heroin undoubtedly occurs, as is seen from newspaper reports. This mode of contravention of the law appears to be more common amongst the vicious group of addicts—i.e., those who take the drugs for the purpose of producing pleasurable sensations or vicious indulgence. This aspect of drug addiction comes under the notice of the police more often than under that of physician or pharmacist.

Mr. John Palmer Gavitt, in his recent book, states that the world production of opium is more than ten times the outside possible legitimate needs of the world. He stresses the importance of effective control of the production of raw opium so that there would not be available a large surplus for illegitimate uses. The same argument applies to coca leaves. The control of the production of the plants from which the dangerous drugs are derived is difficult since often questions of national revenue and finance are involved, and in countries such as China, where the Government is unsettled, effective control of production is impossible.

It has already been pointed out that the institution of the Dangerous Drugs Acts and their consequent Regulations arose from international action, and that the problem of drug addiction from the standpoint of this country alone was not of such grave and pressing importance as to call for the passing of special Acts for its control. We must, however, view the subject of drug addiction from an Imperial standpoint. The British Empire is world-wide in its extent and interests, and includes countries such as India where a large proportion of the plants are grown from which the dangerous drugs are derived. Great Britain, therefore, on account of its Imperial interests is vitally concerned in the problem of the control of the dangerous drugs.

Another aspect of the question must not be lost sight of. Drug addiction is a disease which is infectious, one person influencing another. Though addiction is not common in Great Britain it is prevalent in some other countries. For example, it was estimated by a special committee that in 1918 the number of drug addicts in the United States exceeded one million, and in New York City the health officer reported a prevalence of 1·8 per cent. of the population. It is thus clear that drug addiction is prevalent to a serious extent in the United States. There is a real danger of the spread of drug addiction to this country, and on this account as well as for Imperial reasons it is necessary that Great Britain should play an active part in the fight against this world menace.

### *The Regulations.*

The application of the Dangerous Drugs Acts to this country is evinced by the Regulations which have been drawn up. The Regulations of May, 1921, and the subsequent amendments were very carefully considered by the Home Office authorities, and the representations of the professions of medicine, dentistry, veterinary surgery, and pharmacy were given the fullest consideration. The Home Office authorities, amongst whom Sir Malcolm Delevigne should be specially mentioned for his devoted attention to this difficult subject, did their utmost to meet the wishes of those concerned, consistent with the effective drawing up of the regulations required by the terms of the Convention. It cannot be claimed that these Regulations are at present perfect, but they have been drawn up in a spirit of justice and fairness to all concerned. As regards avoidance of harshness of operation on the professions mentioned, and, what is of equal importance, on the addicts affected, the Regulations are a model to other countries. I know also that moderation and restraint have been shown, as far as possible, by the Home Office authorities and the Ministry of Health in carrying into effect the principles of the Regulations.

In the difficult position created by the Dangerous Drug Regulations it must be borne in mind that the object for which they were framed can only be satisfactorily attained by the loyal coöperation of the professions concerned with the State authorities. Drug addiction, to quote the words of the Departmental Committee on Morphine and Heroin, should with few exceptions be regarded as a manifestation of a morbid state, and not as a mere form of vicious indulgence. It is in this spirit that the Regulations in this country have been framed. They contrast favourably with the Regulations in America and some other countries where drug addicts are regarded as wilfully vicious persons, and are notified to the authorities before drugs can be supplied to them. Doctors even have to obtain a special licence to prescribe the dangerous drugs.

### *Application of the Acts to the Pharmacist.*

The pharmacist is much more closely affected by the Dangerous Drugs Acts than is the physician. For purposes of manufacture, import, and export, he is subjected to a very rigid control and needs a special licence. The Regulations made under Section 7 of the 1920 Act involve most careful registering of every prescription coming under their scope and of all sales and purchases. The onus of detecting forged prescriptions appears to rest with the pharmacist (Section 6 of the Principal Regulations and Section 3 of the Statutory Rules and Orders 1923, No. 312). It is stated that a prescription shall only be dispensed if the person dispensing the prescription is acquainted with the signature of the medical practitioner, registered dentist, or registered veterinary surgeon by whom the prescription purports to be given, and has no reason to suppose that the prescription is not genuine or if he has taken reasonably sufficient steps to satisfy himself that the prescription is genuine. When one considers the difficulty of deciphering the signatures attached to some prescriptions one can form some idea of the difficulty and responsibility devolving on the pharmacist.

It is a common occurrence for prescriptions coming under the purview of the Dangerous Drugs Acts to be written in such a manner that the Regulations are not fully complied with. When these are presented to the pharmacist he is put to not a little trouble and inconvenience before matters can be rectified, and the patient suffers by unnecessary delay. Sometimes questions arise which involve a very intimate knowledge of the Acts and Regulations. To quote one example: Pulv. ipecac. Co. B.P., or Dover's powder, is excluded from the scope of the Act, but a prescription of equal parts of Dover's powder and some harmless drug such as aceto-salicylic acid has been held to come within the scope of the Act—i.e., to be a "dangerous drug." Delivery to messengers of dispensed medicines adds further responsibilities to the pharmacist.

The Regulations applying to hospitals and public institutions have been framed so as to work efficiently and satisfactorily, but they nevertheless add a heavy load of responsibility and labour to the pharmacist. The pharmacist is liable to inspection of his records at any time by official inspectors, who may not have had a special training in pharmacy. In the case of medical men inspectional visits are usually carried out by medical officers of the Ministry of Health, and this considerably lessens the inconvenience caused by the inspection. It would add greatly to efficiency and also to the convenience of pharmacists if official inspections were conducted by officers who were qualified pharmacists.

Lastly, and most important to the pharmacist, is the financial sacrifice involved upon him by the Dangerous Drugs Acts. For many years he had been legally entitled to sell the dangerous drugs and their preparations under the conditions laid down in the Pharmacy Acts. In May, 1921, this right was withdrawn from him. All honour is due to the loyal coöperation of the pharmaceutical profession for their giving up without complaint a privilege and right to which they had been legally entitled.

### *Application of the Acts to the Physician.*

The physician who dispenses remedies coming under the scope of the Acts is required to keep a record of the medicines supplied by him. In the case of physicians who prescribe but do not dispense, special conditions are laid down as regards the writing of the prescription, and it must be signed with his usual signature and address. "Official forms" have not, up to the present, been ordained by the Secretary of State. A physician who prescribes dangerous drugs need not keep any record of his prescription. A physician may write a prescription for his own use (Reg. 1923, No. 577). The application of the Dangerous Drugs Acts and their regulations causes little or no inconvenience to the physician who prescribes only. All that is required of him is care in the details of the writing of his prescription. In the case of the physician who dispenses a certain amount of inconvenience is caused in the keeping of the records of those medicines which come under the scope of the Act, and these records are also liable to inspection.

In the case of the pharmacist the application of the Acts is vastly different. He is deprived of his long-standing and vested right to sell dangerous drugs and their preparations under the Pharmacy Acts. He is subjected to a number of carefully detailed regulations as regards the sale and supply of the drugs. He has to bear the onus of blame where fraudulent prescriptions are inadvertently dispensed. He is saddled with a great amount of very responsible clerical work in the keeping of records. He has to bear the trouble of rectifying matters when prescriptions are presented to him which do not comply in every detail with the Regulations. And lastly, should any infringement of the provisions of the Acts or their Regulations occur he is liable to enormous penalties.

A perusal of the penalties for offences against the Dangerous Drugs Acts (vide Dangerous Drugs and Poisons Amendment Act, 1923) is enough to cause alarm and astonishment. For conviction on indictment a fine not exceeding £1000 or penal servitude for 10 years, or both such fine and penal servitude. On summary conviction a fine not exceeding £250 or imprisonment with or without hard labour for a term not exceeding 12 months, or both such fine and imprisonment. The magnitude of these penalties is due to the recommendations of the International Convention. One cannot but feel that they are ridiculously excessive.

To sum up the application of the Dangerous Drugs Acts. To the physician they have caused some inconvenience if he dispenses his own medicine. To the pharmacist they have caused a greatly increased amount of responsible clerical work, a burden of heavy responsibility especially in the case of dispensing where fraud is attempted, and a definite financial sacrifice.

### *Conclusion*

In view of the great inequality of effect of the Acts on the medical and pharmaceutical professions it appears that it would be equitable that the dangerous drugs should only be supplied on medical prescription, and that they should not be dispensed by a medical practitioner except in cases of emergency or in rural districts where a pharmacist is not available. This procedure has been in operation in the case of insured patients since the adoption of the National Health Insurance Act and it has worked admirably. It would, I think, involve no financial sacrifice on the part of the medical practitioner and would relieve him of troublesome clerical work. The double check—viz., the writing of the prescription by the physician and the dispensing by the pharmacist—would be in the interests of the public for there would be a double safeguard against any possible error. It would be the first step towards that harmonious relationship and coöperation between the professions of medicine and pharmacy which should be arrived at in all their associations, viz.:—

The physician should prescribe and not dispense.
The pharmacist should dispense but not prescribe.

## MIND AND BODY

THE relationship between mind and body has attracted the speculations of the philosophers throughout the ages but it is only of comparatively recent times that any attempt has been made to approach the problem of the mind body relationship by submitting to laboratory examination any of the curiously complex processes involved. The asthmatic's artificial rose, hysterical contractures, and the psychic flow of gastric juice are well known instances of the influence of mind on body. Fear as an emotion can produce great bodily disturbance, and it is possible that the phrase "frightened to death" contains more than an element of truth. A better understanding on the part of the public of the underlying processes and principles governing the relationship of mind and body will help the practitioner to convince his patients and their friends of its importance. An excellent guide for the general reader will be found in a recent little book by Prof John Laird.[1] Starting from the common-sense attitude that our minds and bodies are entirely different, Prof Laird traces the evidence for the mind's influence upon the body and the more obscure general influence of bodily health upon mental function, both from the physiological and psychological points of view. Prof Laird criticises severely much of Freud's work on the unconscious, and goes on to deal with the psycho-biological theories of Rivers and other workers in the field of hysteria. Much recent physiological research has also been skilfully summarised in a few pages. The facts thus set out form the basis for various hypotheses concerning the connexion between the mind and the body, and the hypotheses considered appear to be of three essential types. "Either the mind depends on the body or the body depends on the mind or the two are independent although conjoint." The arguments for and against these various hypotheses are faithfully dealt with and the theory of parallelism between mental and neural processes which denies interaction receives much attention.

The general reader, for whom this book is primarily intended, will have difficulty in following some of the metaphysical theories considered by Prof. Laird, but those who are prepared to give patient study to this book will certainly widen their philosophical outlook.

## AMPUTATION: A LEGAL DECISION

THE *Matin* (May 11th) publishes the following report from its Brussels correspondent. A certain negro king was obliged to have a leg amputated on account of a serious accident. When the operation was over he asked for his leg back so that he might eat it. The doctor, who was a white man, refused his patient's request on the ground that cannibalism is not allowed in the Congo. The king, however, engaged a lawyer and brought the doctor and staff of the hospital before the court at Boma, insisting that they should return his property; and when the court had heard the plea it decided that the hospital must certainly restore the leg to its owner.

## THE PUBLIC SCHOOLS YEAR-BOOK, 1926

PARTICULARS of the public schools of the United Kingdom, arranged in alphabetical order, form the greater part of the contents of the Public Schools Year Book (1926, London: H. F. W. Deane. Pp. 927, 10s. 6d.). There follow entrance scholarship announcements for 1926, regulations for the entrance examinations to the universities, and brief notes on the individual universities and colleges of the United Kingdom. The rest of the book describes the various careers open to young men and the ways in which candidates for professions of all kinds can enter them. The 30 pages allotted to medicine include a comprehensive list of scholarships given in aid of medical study and will be found useful by parents with gifted sons.

## PNEUMONIC PLAGUE IN SIBERIA IN 1921.

Dr. H. M. von Jettmar, of the North Manchurian Plague Prevention Service at Harbin, has made some remarks on Pneumonic Plague in Siberia in 1921,[1] which are of interest. A Chinese coal miner of Dalai Nor, took pneumonic plague on Jan. 25th and infected a Cossack, B., who slept a night at his house. B. crossed the Argun river into Russian territory, where he fell ill on Jan. 30th and died on Feb. 2nd without medical aid. Throughout his illness he lay on his side coughing towards his room, which later was found widely fouled with sputum. All the ten soldiers who regularly slept in his hut of nights caught plague and died. B.'s sister turned up to see his corpse and was interned in the hut till all the deaths were over. She wore a mask and carried out the other protective regulations and was not attacked. B.'s sister-in-law came to see him, yet alive, on Feb. 1st, fell ill on the 4th and died on the 6th. In her smaller room there were four other persons, none of whom became infected, though her sputum was on the 6th an almost pure culture of plague bacilli. She lay on her bed behind a low partition with her face throughout to the wall, on which her sputum fell. This relation of position to infection has been noticed by Kitasato and others. At this time incubation was generally three days, but might extend to five, or even eight. Invasion was sudden. The sputum was not infectious at the very first, but soon became so, and ever more and more (more and more bacilli) as the case went on. Cases lasted two and a half to three days. Dr. von Jettmar did eight post-mortem examinations which were all much as usual though all showing a long bacillus, very numerous, in addition to the plague bacillus. It was most frequent in the subpleural connective tissue but never appeared in the sputum. Another autopsy had special interest. P. fell suddenly sick on the evening of Feb. 18th, and in the early morning went into an outhouse and hanged himself. The temperature was about −15° F., and his body was forthwith frozen stiff, thus giving special opportunity to study, six hours later, the appearances in an early case of pneumonic plague. So Dr. v. Jettmar is able to tell us that there was already advanced consolidation of the middle lobe of the right lung, and it was commencing in the upper lobe. He gives seven closely printed pages of his histological findings, but we have, we regret, only room to say that he finds no reason for supposing that pneumonic plague is primarily a septicæmia; on the contrary, he thinks it is at first localised in the air passages of the lungs. Even on the first day large areas of lung are hepatised. In the early stage there is much effusion into the alveoli of blood serum and cellular exudate, through this the bacilli are uniformly distributed, only later tending to gather on the alveolar walls. There are no bacilli in the blood vessels, but they are seen in the lymph spaces around vessels and bronchi. The long bacillus was not found in this case, only the plague bacillus; an unusual finding in this particular epidemic. In this very early stage the usual necrosis of tissue was conspicuously absent. There were no bacilli in the spleen.

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[1] Our Minds and Their Bodies. By Prof. John Laird, Regius Professor of Moral Philosophy in the University of Aberdeen. London: Humphrey Milford, Oxford University Press. 1925. Pp. 122. 2s. 6d.

[1] Archiv für Schiffs und Tropen Hygiene, November, 1925, p. 630.

## DIETETICS.

A LITTLE book [1] based upon the diagram of a "square meal," which was first published in a pamphlet for the People's League of Health, is concerned principally with the three vitamins and with protein, which form the four corners of the square in the diagram. After a short historical chapter, in which the sins of civilisation are emphasised, and a general chapter on the purpose and nature of food, Prof. and Mrs. Plimmer proceed to deal in some detail with the various deficiency diseases. Throughout they bring out their thesis that while absence of this or that factor produces a definite disease, relative absence may produce minor disturbances of health which may in turn culminate in more serious maladies such as diabetes or cancer. We would point out that eminent dietitians have protested against this view. The return to natural foodstuffs, so-called, by the population at large would probably not be an unmixed blessing despite the attractive arguments advanced in this book and elsewhere, but we may nevertheless admit that "civilisation has made it too easy to get wrong foods of all kinds." At any rate, the plea for a better balancing of the diet in the "square meal" is one which can be thoroughly endorsed, and this little book makes quite clear what this balance means.

## RECTAL FEEDING.

IT is not uncommon to consider that adequate nourishment, at any rate the best obtainable under the circumstances, is provided by an enema containing milk and egg. Mr. S. W. Cole points out, in the April number of the *Charing Cross Hospital Gazette*, that egg-white per rectum is entirely useless since the only proteolytic enzyme secreted by the large intestine is erepsin, which is normally utilised to split the peptones and polypeptides, formed by gastric and tryptic digestion, into free amino-acids, in which form they can be absorbed by the blood. The proteins of egg are therefore returned unchanged except for partial decomposition by the bacteria. The casein of milk is partly digested by its previous peptonisation to a mixture of amino-acids and caseoses, and these latter are susceptible to erepsin. Milk, therefore, probably yields an appreciable amount of assimilable protein before it is returned by the bowel. But the whole yield of protein from 6 oz. of diluted peptonised milk is not more than 1 g., and the milk cannot be used stronger because of the slow action of trypsin on undiluted milk. Now the recognised standard figure for adults is 100 g. per diem, and the administration of 1 g. of protein in a nutrient enema, even if four are given daily, is manifestly futile. Mr. Cole suggests the use of a broth which he has used in his Cambridge laboratory for many years. It is made by shaking 200 g. of commercial casein with 2 litres of water and adding caustic soda to dissolve the casein and bring the solution to $pH = 8{\cdot}1$, the optimum reaction for trypsin. It is then incubated with strong tryptic extract, and some antiseptic such as chloroform or toluol, for 8 to 14 days at 40° C. The resulting filtrate is stable and contains about 9·5 per cent. of digested protein, about 50 per cent. of which is in the form of free amino-acids. Thus, if four enemata of this solution were given daily, about 64 g. of protein would be absorbed. Mr. Cole urges the trial of this solution in surgical or obstetrical cases requiring rectal feeding, and also in some forms of anæmia where the failure of digestion or absorption gives the intestinal bacteria more than their normal chance of destroying the amino-acids or converting them into toxic compounds. The free amino-acids thus provided might be absorbed before the flora of the bowel had time to attack them.

## THE TRUTH ABOUT BORSTAL.

THERE is a point of view from which Borstal institutions are regarded as part of a degraded and brutal system; whilst from another they appear to be organisations managed by sentimentalists for the purpose of coddling young criminals who would be better dealt with in the way that all right-minded people would deal with all such scoundrels. Stimulated by these contrary views, Mr. Moseley [2] set out to find what the institutions really were and what they did. He familiarised himself with the procedures by which offenders were sent to them, he sought out those who had the management of the system, and he visited the different establishments to obtain first-hand information from their inmates. The result is a simple account of the development of the four institutions at Rochester, Feltham. Portland, and Aylesbury, with their achievements in the reclamation of social misfits before they became irreclaimable. He concludes that there has been a vast improvement in the Borstal system in recent years, that it is now sensible and humane, and that the difficult problem of the delinquent adolescent is being fairly well met though there remains room for further reforms, especially in selection and classification. The book is well illustrated and its balanced presentation of facts justifies its title.

## TROPICAL HYGIENE FOR SCHOOL CHILDREN.

"In the tropics," says Dr. Mary Blacklock, of the West African Medical Service, "we may still see a schoolboy, ignorant of the cause of malaria, clasping a book of Euclid close to his enlarged malarial spleen, and may still hear a learned B.A. discoursing eloquently on the philosophy of John Stuart Mill, the while mosquitoes breed in the roof gutters of his house and rats scamper over the refuse heap in his yard." In their attempts to promote the public health sanitarians are constantly thwarted by the ignorance of the people, and it is to meet the need for simple instruction that Dr. Blacklock has written "An Elementary Course in Tropical Hygiene," of which the first part has been published for the Tropical Diseases Bureau by John Bale, Sons and Danielsson, Great Titchfield-street, London, W., at 1s. (pp. 44). Dr. Andrew Balfour contributes a preface and we agree with him that this primer is well adapted to the needs of the child mind. It is in two divisions. The first is a series of lessons on the things which keep the body healthy and things which make it unhealthy. The second is in story form and is told in such a way as to interest any children who can understand simple English. Dr. Blacklock has added drawings of some of the principal enemies of man, and the handbook will certainly be useful in the hands of any reasonably intelligent teacher.

*J. D. D.* has omitted to enclose his address.

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## ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee 30 cases were considered and £188 voted to 28 applicants.

Daughter, aged 49, of M.D. Edin. who was a retired colonel in the A.M.S. and died in Devonshire in 1919. She has tried to maintain herself, but owing to ill-health and bad eyesight has had to give up work and is now living on her capital which only brings in £17 per annum at the present time. Friends gave £12 and she received £3 10*s*. as a lady help for two months. Voted £20 in four instalments.

Daughter, aged 70, of M.R.C.S. who practised in Norfolk and died in 1868. Applicant has worked as a children's nurse for 24 years; since as a housekeeper until recent illness. Now unable to do anything. Is applying for the Old Age Pension. Only income £2 17*s*. 6*d*. per annum. Lives with a friend who is unable to keep her. Voted £26 in 12 instalments.

Daughter, aged 62, of L.S.A. who practised in London and died in 1914. She has a small nursing home, but owing to the bad condition of the house is unable to get patients. Has borrowed money to meet rent of which £6 2*s*. is still outstanding. Received from patients £103. Rent £56, rates £20. Voted £10.

Widow, aged 55, of L.S.A. who practised in London and died in March. Applicant's late husband was over 80 years of age and needed constant attention, which precluded the applicant from earning. She is now looking out for a post and the Fund granted her £15 to meet outstanding rent and to carry her on whilst seeking work.

Widow, aged 40, of M.B. Glasg. who practised in Wales and died in 1924. Asks for help with her son, aged 15, who through the influence of friends is now apprenticed to a firm of engineers. This boy is now in charge of a guardian as the applicant is lying seriously ill in an infirmary. Guardian voted £26 in 12 instalments towards maintenance of the boy.

M.R.C.S. Eng., aged 56, who was in the A.M.S. and owing to mental breakdown will be unable to work again. Relations subscribe to the support of the applicant but one has recently retired from his profession and is unable to continue his contribution. Fund voted £30 in 12 monthly instalments in May, 1925, and the amount was renewed at this meeting of the Committee.

Daughter, aged 53, of M.R.C.S. Eng. who practised on the East Coast and died in 1908. Very delicate and unable to work. Lived with her mother (who was a pensioner of the Fund) until she died in 1922. The applicant has received £93 from the Fund since 1920 and her grant of £18 was renewed.

Daughter, aged 44, of M.R.C.S. Eng. who practised in Yorkshire and died in 1906. Has been an invalid since the death of her father and is looked after by a nurse who receives 15*s*. a week for her maintenance. A brother-in-law has helped to keep her at the home, but owing to his inability to find all the money the Fund was asked to help. £175 has been granted since 1919 and the grant of £26 in 12 instalments renewed.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, W. 1.

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[1] Food and Health. By R. H. A. Plimmer, D.Sc. Lond., Professor of Chemistry in the University of London; and Violet Plimmer. London: Longmans, Green and Co. 1925. Pp. 64. 2s.

[2] The Truth about Borstal. By Sydney A. Moseley. London: Cecil Palmer. 1926. Pp. 165. 6s.

# The Linacre Lecture

ON

# DISEASE IN THE LIGHT OF EVOLUTION.

*Delivered at Cambridge on May 6th, 1926,*

BY SIR F. W. ANDREWES, O.B.E.,
M.D. OXF., F.R.S.,
PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LONDON.

THERE was published last year a book, written by many well-known authorities, entitled "Evolution in the Light of Modern Knowledge." It dealt with evolution as it relates to no less than 13 different subjects, covering most of the natural sciences, and ranging from the birth of the universe to psychology and religion. But it contained no chapter on evolution in relation to pathology, and when I received the great honour of an invitation to deliver the Linacre lecture this year it seemed that here was a subject ready to hand, and I resolved to do my best to supply the missing chapter.

If the shade of Linacre hovers over the lecture which he founded so long ago he may be puzzled to know what my title means. But he ought not to complain of my choice if he can be persuaded that a principle which has transformed and vivified every branch of natural knowledge can render the same service to the subject to which he himself dedicated so much of his life. A right understanding of the processes of disease lies at the very root of medicine, and it is the great merit of the doctrine of evolution that it stimulates us not only to ascertain the facts of Nature but to understand them better, by tracing, so far as we may, the manner in which they have come about.

There is no need, in Darwin's own university, to defend the doctrine of evolution, and I am content to accept his fundamental conception of natural selection as the chief agent in bringing about the upward progress of life. Most of us can agree that, in the struggle for existence, those individuals or races have had the best chances of survival which have become best adapted to their environment and have proved most capable of adaptation to changes in their environment.

### THE ADAPTATIONS TO ENVIRONMENT.

Now, if one were asked to define health, it would be difficult to do so except in terms of adaptation to environment. The healthy body is one which is not only perfectly adjusted to its surroundings, but is capable of adjusting itself, within reasonable limits, to the circumstances of a rapidly changing environment. Disease is a condition in which the body has fallen, in lesser or greater degree, out of harmony with its surroundings; we may feel only discomfort and inconvenience, but in its graver forms life itself is endangered.

Success or failure in adaptation to environment is thus a link which connects the struggle of the race for existence with health and disease in the individual. We may be prepared to find the relation a close one, and the more we study the matter the closer it seems. The relation is reciprocal; there can be no doubt that disease has profoundly influenced the march of evolution, and equally none that many of the processes of disease, as we see them to-day, have not only been improved and modified, but owe their very origin to the survival of successful modifications during the course of evolution in the past.

Disease constitutes no small item amongst the adverse circumstances against which the struggle for existence has been carried on. It may arise from within, in the form of unfavourable morphological, physiological, or chemical variations in the individual, which have tended to weed out their unfortunate subjects in competition with others. Much more often diseases arise from without. Adverse climatic conditions, inadequate nutrition, wounds and injuries, and, above all, invasion of the body by parasites of all kinds, especially by micro-organisms—these are some of the troubles against which the body has to contend, and in face of which the weaker goes to the wall. Of all the teeth in the terrible comb with which Nature sorts out the inefficient, disease is one of the most formidable. It may well be that, in the past, whole races of animals have been swept away by diseases against which they were unable to establish resistance. There is no actual proof of this, though we know from the scanty evidence of fossil bones that disease is of vast antiquity. Even in modern times we have witnessed the extermination of races of mankind by the infections which contact with civilisation has brought in its train.

Our ideas of disease are naturally based upon what we see of its processes in the more highly organised plants and animals, and especially in man. But if we take a wider outlook we shall realise that diseases must necessarily have become more numerous and varied in the course of evolution. The more complicated and elaborate the mechanisms by which highly specialised organisms secure their adaptation to environment, the more liable are they to get out of order. A chronometer can suffer from a greater variety of defects than an hour-glass. If we are to accept the idea of evolution in disease and its processes we must be prepared to start from a more primitive state of affairs than we see to-day. Search in the records of the past for evidence of the beginnings of disease is largely fruitless; fossil records are not only casual and imperfect, but practically limited to the hard parts which are affected only by few diseases. Much more promising is comparative pathology, for here we can directly study the processes of disease in lower animals and bring them under experimental control in the laboratory. It is in this manner that we may most surely hope to unravel the problems of the evolution of morbid processes, following the lines so brilliantly laid down by Metchnikoff in his studies of inflammation.

### THE EVOLUTION OF DEFENCE PROCESSES.

The subject to which I wish to direct attention in this lecture is the manner in which the animal body has learned to defend itself against injurious agencies, believing, as I do, that the processes of defence have been gradually developed and perfected in the course of evolution.

The primitive notion of disease was that of some personal devil entering into the body, to be expelled by charms and exorcisms. This is true of some diseases if we choose to regard an infective microbe as a personal devil, but even so it is not wholly true, for the devil may enter yet no disease result, as we see in many bacterial carriers. The phenomena of disease arise when the body takes steps to expel the intruder. Even up to recent times disease was held to be an abnormal state into which the body fell. But now that we have a clearer apprehension of the causes of disease and of the nature of its manifestations, we realise that the latter for the most part represent reactive processes by which the body is attempting to overcome the hurt that is being done. We recognise definite "disease processes," many of which are in the long run beneficial to the organism. It is an evil that a tissue should become inflamed and that the body temperature should rise in an acute infection, but it is a lesser evil than that the infecting agent should overrun the body unchecked by any antagonistic mechanism. The recognition of inflammation and fever as beneficent reactions means a change in the point of view from which we attempt treatment.

### *Inflammation.*

Of all the various processes of disease that of inflammation is the one which can best be followed in its evolution, chiefly owing to the patience and genius of Metchnikoff in following the response to from the most lowly forms of life to the

We cannot dissociate the reaction to injury which we call "inflammation" from the actual repair of injury to which it commonly leads up. It is true that acute inflammation and repair are not the same thing, for either can occur without the other; but acute inflammation shades gradually into chronic, and chronic inflammation is so closely associated with repair that we cannot consider them apart.

The epiblast and hypoblast are chiefly concerned in the formation of specialised tissues of epithelial nature, and this is also true of the mesothelial division of the mesoblast, which, besides giving rise to the voluntary muscles, forms the urinary and reproductive epithelium. The mesenchyme is that other division of the mesoblast which is responsible for all the connective tissue framework of the body and for the vascular and lymphatic endothelium. It is not to be denied that many tissues of epiblastic, hypoblastic, and mesothelial descent possess, even in adult life, considerable power of regeneration; they can undergo mitosis and multiplication to replace cells which have been lost. But they do this without the necessary intervention of anything that we can call inflammation, though we witness the process often enough in the closing stages of inflammatory repair, as when epithelium grows over a healing wound. But the point which I wish to emphasise is that inflammation, whether acute or chronic, is essentially a process carried out by tissues of mesenchymal descent.

We see this clearly brought out by the studies of Metchnikoff, and those who have not time to read these in the original will find them succinctly summarised by Adami in the chapter on inflammation in Allbutt and Rolleston's "System of Medicine." The mesoblast is seen in its most rudimentary form in the larval echinoderm at the gastrula stage; it consists here of a few stellate or wandering cells in the cavity between the epiblast and hypoblast. If a spicule of any sharp substance be introduced into this cavity, as might easily happen naturally, the wandering mesoblastic cells are seen to approach the foreign body, and, should it be too large to be enclosed by any one of them, several apply themselves to it and fuse into a syncytium, thus rendering it harmless to the more important cell layers.

By no stretch of the imagination can we call such a process inflammation; it is just a protective reaction on the part of the wandering mesoblast, definitely advantageous to the organism. Yet it would seem that from such a simple thing as this the elaborate reaction of inflammation in the higher vertebrates has step by step been evolved, and some of the steps can be followed.

The rudimentary mesoblast of the echinoderm becomes more complex as we pass up the animal scale. In worms and crustacea the wandering mesoblastic cells of the body cavity are now definitely of the nature of primitive leucocytes, eventually becoming differentiated into leucocytes of more than one kind. Metchnikoff showed that these early leucocytes already exhibit the capacity for engulfing and destroying intruding microbes—the beginnings of that defence which I shall have to speak of in more detail later in this lecture. In the earthworm the spores of parasitic gregarines may thus be destroyed, and in the small crustacean, *Daphnia*, a similar defence against a parasitic yeast is seen. Further, the repair of small injuries to the carapace of the crustacean is found to be associated with an accumulation of leucocytes beneath the seat of injury. But amongst invertebrates the reaction to injury or infection seems at the most to consist in a phagocytic activity on the part of the primitive leucocytes, combined with a capacity for the regeneration of lost parts, to which I shall refer a little later. It is noteworthy that the vascular system, which is developed in some invertebrates, takes no share in the process, and, indeed, it would seem difficult for it to do so, since it rarely forms a closed system. The concept of inflammation is so closely associated in our minds with active vascular changes that some pathologists have denied the right of the reactions I have so far mentioned to be regarded as in any sense inflammatory. All that I am concerned to insist on is that we have here the germs of a process which was capable of developing, with better facilities, into what later became inflammation.

### *The Rôle of the Vascular System in Defence.*

The great forward step which was destined to revolutionise the response to injury is to be found in the development of a closed vascular system under vasomotor control, already present in the lowest vertebrates. Consider for a moment how the vascular system can aid in defence. It can bring to an injured region an increased supply of blood, not only conveying extra nutriment but an added number of leucocytes. Moreover, it can do these things promptly; the leucocytes, instead of having to walk, can go by train. Compare, in man himself, the sluggish nature of the reaction to injury in a non-vascular tissue such as the cornea with the rapid reaction seen after similar injury to a vascular tissue; the first takes 24 hours for its development, while in the second the process may be well advanced in half an hour. Nor is this all, for a closed vascular system renders possible a new feature in defence—namely, the mobilisation of the body fluids. The outpouring of the fluid elements of the blood into a damaged area fulfils many purposes: bacteria and their products or other chemical irritants are flushed away, fibrin can be deposited to circumscribe the spread of mischief, while the antibodies carried by the plasma can antagonise bacterial poisons and destroy the microbes themselves. The surgeon knows well what a change takes place in a foul wound which has dried up when he can succeed in re-establishing a free flow of fluid from the vessels.

It is little matter for wonder that Nature has exploited the blood vascular system to the utmost in the improvement of the processes of defence and repair, and to such good effect that we see the vascular changes dominant in the process of acute inflammation in the higher vertebrates. Nevertheless, I think we should err if we defined inflammation in terms of the vascular changes, for the vessels, after all, are only a means to an end. The central features of the process, to which everything else is subservient, are the outpouring of the fluids of the blood and the emigration of the leucocytes into the damaged region. It is the wandering mesenchyme which does the chief work, as it did far away back amongst the invertebrates, though the mechanisms by which it is brought into action are improved out of all recognition. Surely it is not too much to say that we can here trace the evolution of one of the most important morbid processes from a simple beginning up to full development.

### *Potentialities of the Tissues.*

If it is true that acute inflammation is essentially a mesenchymal reaction, this is even more obvious in chronic inflammation and repair. In considering the repair of tissues it will be found that the march of evolution has pursued a somewhat different course from that seen in acute inflammation. The lower we go in the animal kingdom the more extensive and complete do we find the capacity for the regeneration not only of tissues but of whole portions of the body. The higher we go the more restricted does the capacity become. This is a consequence of the law which seems universal in nature, that specialisation of function entails loss of more primitive faculties. The highly specialised workman in an industrial community can do his own job supremely well, but if he loses his employment he cannot turn his hand to anything else; he is no longer a handy man able to earn his living at whatever task presents itself.

The fertilised ovum and the blastomeres resulting from its first few segmentations possess the power of giving rise to all the tissues of the body; they are what Barfurth called "totipotential." As the development of the embryo proceeds, and the germinal layers are formed, their cells lose something of this primal capacity; they become "pluripotential" and can give rise only to certain kinds of tissue. Finally, as the definitive tissue rudiments are laid down, the possibilities of each kind of cell become further sorted out, till it becomes "unipotential"—capable of giving rise only to one kind of tissue. Only the germinal epithelium retains the full heritage of the species.

If, now, we follow out this conception in the evolution of the animal kingdom, we find the totipotential character present to some extent even in the tissues of the adult amongst the lower invertebrates. If a hydra is cut into a number of pieces, each can regenerate a complete animal. A lobster can grow a new claw to replace one which has been lost, as good and complete as the original though for long smaller than its fellow. But the power of reproducing lost parts becomes reduced as we pass up the animal scale, and even in the lower vertebrates is very imperfect. A lizard can grow a new tail, but it is not a good tail in comparison with the one which has been lost. In mammals there is no such power. All that remains is a unipotential capacity for compensatory hypertrophy in virtue of which, when an organ is removed or seriously damaged, its fellow, or any portion of the organ which may have been left behind, undergoes an increase in size enabling the work of the lost tissue to be carried on. In the individual tissues of the higher mammals, the more specialised the cell the less, as a general rule, do we find its capacity for regeneration. The most highly specialised cells, such as the central neurons, never regenerate. Cardiac muscle, though it may undergo hypertrophy in response to physiological needs, is never replaced when lost, and ordinary voluntary muscle makes only the feeblest efforts at regeneration. *Almost the only instance of a specialised epithelium* with noteworthy powers of regeneration is that of the liver. On the other hand, the unspecialised epithelia of the body surfaces are regenerated with ease.

The higher animals, however, enjoy some compensation for this loss of universal regenerative power. As it recedes in the higher tissues it becomes exalted in the lower, and more or less concentrated in tissues of mesenchymal origin. Modern researches indicate that the mesenchyme, having in the course of fœtal development furnished all the supporting tissues of the body, persists also throughout life as a piece of permanent machinery for repair. Whereas acute inflammation is a response on the part of the more active and mobile of the mesenchymal elements, carried out mainly by the intermediation of the vascular system, chronic inflammation and repair are brought about by the slower activities of another set of cells of primitively similar origin.

The nature of the familiar small, round-celled infiltration in chronic inflammation has been elucidated in recent years by a number of workers, including Marchand, Maximow, and others. Although in certain details all are not in complete accord there is a general consensus of opinion to the following effect. When, in the course of embryonic development, the mesenchyme has given origin to fibrous tissue, bone, cartilage, and other supporting tissues, the cells thus specialised have fulfilled their normal destiny, and if they have occasion to multiply in later life they give rise only to other cells of like kind. But a large number of mesenchymal cells are not thus used up, remaining in their primitive embryonic condition throughout life, and retaining much of the pluripotential capacities of the original mesenchyme. These wandering or sessile mesenchymal cells are universally distributed throughout the tissues of the body and have been described under many names. The term now in common use for them is that of "histiocytes." They are recognisable by their marked capacity for vital staining and their function is that of a diffuse "organ," the retention by which of its embryonic potentialities enables it to undertake the work of repair when and where this is needed. The function is restricted to the provision of fresh supporting tissue; we never see new epithelium produced in this way. In practice we find that wounds of almost every tissue and organ heal by a process of chronic inflammation which results mainly in white fibrous tissue containing a few blood-vessels. An exception lies in the repair of bone which in all favourable cases is by a new formation of true bone. But the pluripotent nature of the histiocytes is sometimes manifested by the formation of true bone as the result of chronic inflammation in other situations. In old blind eyes a plate of bone sometimes forms at the back of the globe, and bone is not rarely to be found in arteries which are in a state of advanced degeneration. Myositis ossificans is a well-known example of bone formation in voluntary muscle and I have known plates of true bone to arise in the subcutaneous tissue.

Thus, in chronic inflammation and repair we see the inevitable loss of regenerative power which attends the evolution of highly specialised tissues well compensated by a highly developed power of repair on the part of the mesenchyme.

### FEVER IN THE LIGHT OF EVOLUTION.

Let me now turn to another pathological process—fever. Here, indeed, we can only infer the probability of an evolutionary development; we cannot follow it step by step, as we could in inflammation.

From a physiological point of view the development *of the power of so regulating the temperature of the* body as to render it independent of changes in the temperature of its surroundings was an immense step in advance. The faculty probably appeared in late secondary times when birds arose from reptilian stock, but we cannot imagine it as arising other than gradually. Even amongst "cold-blooded" animals instances are to be seen in which a temperature can be maintained some degrees above that of the environment. When once the regulating power was fully developed, each species of animal must have learned, by a process of natural selection, what bodily temperature best suited its size and general activities and have adopted this as its normal temperature. Man has a norma some degrees below that of many mammals, while the normal temperature of small birds is so high as to be incompatible with human life.

The maintenance of a constant temperature rests on a due balance between heat production and loss. The ultimate presiding mechanism of regulation is even to-day not located with certainty; there is supposed to be a chief thermotaxic centre in the central nervous system, governing certain lower centres. That there is an extra-cerebral hormonic influence on the part of the thyroid-adrenal apparatus seems also probable. The precise physiological mechanism of heat regulation does not concern me at the moment; I only want you to envisage the maintenance of a constant temperature as an incessant struggle between the body and its surroundings.

Although the body is habitually successful in this struggle, it is not so in all circumstances. Just as a man may be frozen to death from prolonged exposure to severe external cold, so his temperature may rise to a fatal height from exposure to great heat. There are extremes of external heat and cold which are too severe for the thermotaxic mechanisms to cope with, strive as they may. Again, these mechanisms may be put out of action by gross injury, as in cerebral hæmorrhage, or by some profound poisoning, as in the uncommon cases of hyperpyrexia which may occur in ordinary fevers. The reason why thermotaxic paralysis sends the temperature up and not down is that heat production in the body is always potentially in excess.

Convenient general terms for temperatures below and above those normal to the body are "hypothermia" and "hyperthermia." The instances of hyperthermia which I have just mentioned are cases in which the regulating mechanisms fail to act either because they are injured or have been set a task too great for their powers. They are cases of "simple" hyperthermia in which the body is still [illegible] keep the temperature down, as is [illegible] flushed skin, sweating, and prostratio

I have felt obliged to labour this point, because when we turn to true fever we find the *conditions very different. True fever stands apart, by* common consent, as a special form of hyperthermia, differing in important respects from the simple form. There is a difference in the cause; with trifling exceptions fever is always due to an infection of some sort. *There is a difference in the mechanism;* while the temperature is rising in true fever loss of heat is checked by vasoconstriction of the cutaneous vessels; the patient feels cold and thermogenesis is actually increased by involuntary muscular shivering. One cannot resist the impression that the body is raising its temperature on purpose. Further, the departure from a normal temperature is not indefinite; in heatstroke or hyperpyrexia the temperature, unless artificially controlled, goes on rising to a fatal height, *but in true fever it rises to a certain level and seems* then content. Regulation of temperature is not abolished but altered; there is a daily fluctuation, often a considerable one, but it is about a new and higher level. The body seems to resent any outside efforts to bring its temperature down; this can, indeed, be done with baths or antipyretic drugs, but the effect is temporary and the fever soon comes back to what it had been before. Only when the cause of the fever has ceased to operate, when the infection is overcome, does the temperature come down of its own accord.

How are we to interpret these curious facts? Some *have represented the condition as a mere weakening* of normal temperature regulation. It may be conceded that, in fever, regulation is more unstable than in health, but such an explanation does not enable us to understand the purposeful manner in which *the body sets about raising its temperature.* Most pathologists are now willing to admit that true fever, as distinguished from simple hyperthermia, is a deliberate reaction of the body, serving some useful end in cases of infection sufficient to counterbalance its evident evils.

To establish the hypothesis that fever is a beneficial reaction one must be in a position to indicate some prima facie evidence that benefit does, in fact, arise, and there is such evidence, both clinical and experimental. *It is a matter of clinical experience that,* given an infection of tolerable severity, those patients who exhibit marked fever do better than those who fail to do so. It seems actually better for a case of acute lobar pneumonia to have a temperature of *104° F. than one of 101° F.* Apart from the rare cases of hyperpyrexia in which temperature control is wholly lost and we are compelled to bring the temperature down to save the patient's life, the balance of clinical evidence shows that it is wisest *to leave the fever, as such, to run its natural course.* Anything that we can do to help the patient to overcome his infection is all to the good, but to attempt to lower the temperature by antipyretic drugs does not appear of much service.

As regards experimental evidence, it is known that artificial cooling renders warm-blooded animals more susceptible to infections with such bacteria as anthrax and streptococci; a chill is often the apparent cause of pneumonia in man. Conversely, artificial hyperthermia has been shown to exercise a favourable influence on the course of infection in animals. Walther was unable to produce a general infection with the pneumococcus in hyperthermic rabbits, though in the normal animal this readily occurs. Filehne found that in warmed rabbits streptococcal infection ran a more pronounced, rapid, and favourable course than in cooled animals. It is not, indeed, to be supposed that, even in high fever, *the temperature* approaches that fatal to the invading bacterium, but every microbe has an optimum temperature, above which its higher physiological activities become impaired. Fever may thus help, at least in a contributory manner, towards overcoming an infection.

If we accept such a view we are almost bound to believe that, like inflammation, fever has been developed and perfected in the course of evolution. It would seem to be a specialised modification of temperature regulation, arising in animals in which such regulation has already reached a high stage of development. We know nothing of a rise of temperature in cold-blooded animals in response to infection.

## THE EVOLUTION OF INFECTIVE DISEASE.

This brings me to what is, perhaps, the most interesting part of my subject—the evolution of infective disease. This condition is undoubtedly of immense antiquity; the scanty fossil records, summarised by Moodie in his little book on "The *Antiquity of Disease,*" indicate the existence of caries, necrosis, and suppuration in connexion with bone amongst the giant reptiles of mesozoic times and probably even earlier. The evolutionist who wishes to speculate on the origin of infection has, therefore, *plenty of time at his disposal.*

The subject divides itself naturally into two parts. We have to trace the origin of the parasitic mode of life and of the special attributes which it necessitates; on the other hand, we have to consider the development of the faculties by which the host endeavours to keep the parasite at bay. The parasite is the attacking party and it is logical to consider its evolution first, but the problems of attack and defence must from the beginning have gone hand in hand and been originally much simpler than they now are. It is reasonable to trace back the parasitic habit to commensalism or symbiosis, in which two creatures live harmlessly together, often to their mutual advantage. Parasitism begins when all the benefit of the arrangement goes to one of the parties, while the other is usually in some degree injured by it. We see in Nature every degree of parasitism from instances in which the habit is transitory and unessential up to those in which it is fixed and obligatory.

We do not find amongst parasitic microbes those degrees of morphological degradation which are the rule amongst the higher animal parasites; indeed, they differ very little in outward appearance from their non-parasitic allies. Lack of time forbids me to attempt any discussion of the evolution of the larger animal parasites, profoundly interesting though the subject is. I regret this the less because, however remarkable the life-histories of parasitic worms and insects may be, no corresponding interest attaches to the defence of the host, which in most cases seems passively to suffer the presence of the parasite without any noteworthy effort to get rid of it. It may be that this is because the troubles arising in the host from the larger parasites are mainly mechanical in their nature, rather than toxic. *Far otherwise is it with* microbic parasites, at whose invasion the body expresses its resentment in a variety of ways, familiar as the signs and symptoms of infective disease, as well as in the more cryptic methods revealed by *immunological study.*

### *The Parasitic Habit.*

I turn, therefore, to the evolution of the parasitic habit amongst micro-organisms. Twenty years ago, in the Horace Dobell lecture before the College of Physicians, I put forward the stages by which I believed this evolution to have taken place, and I *do not wish to recant anything that I then wrote.* There are three modes of life open to such organisms as bacteria. They may subsist in typical vegetable fashion on simple mineral foods; they may subsist, like most other fungi, on dead organic matter; they may attack the living animal or vegetable body and feed on the living tissues or fluids. Fischer coined the terms "prototrophic," "metatrophic," and "paratrophic" for these modes of subsistence; it is more usual to speak of the two last as "saprophytic" and "parasitic." Again, a bacterium may grow best, or even exclusively, at the ordinary temperature of air or water; or it may have its optimum temperature *at about that of a warm-blooded animal,* growing only feebly at air temperature; a few bacteria grow best at very high temperatures, fatal to most forms of life. Fischer has coined the convenient terms "psychrophil," "mesophil," and "thermophil" for such temperature requirements, and it is noteworthy that a given bacterium almost always falls clearly into one of the three groups, though there is some overlapping.

Bacteria are of extreme antiquity and have been recognised with considerable certainty in rocks of early palæozoic date. Primitive bacteria must have been prototrophic and psychrophil. How and when they, with other fungi, adapted themselves to a saprophytic mode of life we do not know, but it was very early for, even in palæozoic times, mould fungi and bacteria appear to have invaded dead bones where they have been fossilised.

The next step must have been association with the bodies of higher animals for the sake of the abundant nutriment there to be obtained, and this, too, must have been early and long before warm-blooded animals came into existence. The advantages to the microbe of this association or symbiosis, are obvious; the cutaneous and mucous surfaces of the host, and especially the contents of the alimentary canal, form an ideal habitat for saprophytic micro-organisms. So long as such association was with the body of cold-blooded hosts no fundamental modification was requisite in the life of the microbe, but when warm-blooded animals arose such symbiosis demanded one important change. The microbe was compelled to adapt itself to the temperature of its host, and thus we may conceive mesophil bacteria and animal parasites to have been derived from the primitive psychrophil forms. All those bacteria which we now find to grow best at body temperature may be assumed to be naturally saprophytic on birds or mammals. In the bacteriological examination of air or water, the only organisms to which we pay serious attention are the mesophils, which we regard as an index of pollution from animal sources.

One disadvantage of the mesophil habit is the precarious nature of transfer from one host to another, since these saprophytes are continuously being voided from the body. But the retention of some power of multiplying at air temperature and the faculty of resisting drying for a certain time enable a sufficient number to reach a new host so that the life of the species is not endangered. The endospores of many bacilli and the cysts of intestinal amœbæ greatly facilitate the process of transfer. It is only when we come to the more delicate of the strict parasites that transfer can only be accomplished by actual contact of the two hosts, as we imply by the term "contagious disease."

The final stage begins when such harmless saprophytic associates of the body are no longer content to inhabit its surfaces, but strive to enter the blood and tissues and maintain themselves there. I have already alluded to evidence that even this parasitic process is of great antiquity, preceding the evolution of warm-blooded animals, and we know that such parasitic invasion occurs to-day even in lowly invertebrates. The struggle for existence has always been so keen that every nook and cranny which could be made to support life was liable to be invaded. Given a horde of saprophytes infesting the surfaces of the body, it is evident that there are ample opportunities for deeper intrusion, whether through chance wounds, or by absorption from the intestine. The mesenteric glands are seldom sterile and there is experimental evidence of sparse infection of the liver by the portal blood-stream.

The host, which tolerated a harmless saprophytic association, was now bound to take cognisance of such unwelcome intruders. Before adequate means of defence had been evolved the invasion was presumably not hedged about by the difficulties which beset it to-day. But the host had to defend itself, and, as I hope to discuss in a little while, it has been in the long run successful in keeping most of the would-be invaders at bay. One has to speak, for the sake of brevity, as if the opposing parties were conscious agents, but you will understand me to mean only that natural selection favoured such chance variations as enabled the fittest to survive. When once the host had begun to defend itself, we must conceive of counter-moves on the part of the parasite, designed to break down the defence, and we must imagine a number of such devices, arising one after the other, as new defensive methods were evolved by the host. The production of substances poisonous to the cells of the host has been one such device; amongst the most successful parasitic microbes are those which form toxins inimical to the tissues of the body. There is no doubt that the thick capsules which some bacteria form when growing in the body represent a sort of protective shield for the parasite. Bacteria appear also to produce substances which poison the leucocytes sent to do battle with them. The "aggressins," described by Bail, are substances produced by bacteria in the body, not in themselves poisonous, but in some unknown way assisting the bacterial attack. All these properties of a successful invader are summed up in the convenient term "virulence." We have to envisage the struggle as one in which both parasite and host are each constantly endeavouring to immunise itself against the other, and the result is an unstable equilibrium in which a very little turns the scale.

It will, I think, be generally agreed that parasitic bacteria have been evolved from the regular saprophytes of the body, by chance variations which enabled them to take advantage of accidental introduction into the body proper and thus conquer a new field. This they have succeeded in doing by developing active means of aggression or passive shields of defence. In a few organisms the process has been so successful that they have permanently adopted the parasitic life and can no longer live in any other way. Others are facultative, not obligatory parasites; they habitually live on the surfaces of the body as saprophytes and only invade it in specially favourable circumstances.

### *Parasites and the Alternation of Hosts.*

There exist, however, certain diseases in which the evolution of the parasite cannot have followed the course I have just outlined, those, namely, in which the parasite undergoes an obligatory alternation of hosts and in which the warm-blooded animal is always infected by the bite of an insect. Such diseases are due either to protozoa or protista, never to bacteria. The sexual phase of the parasite is passed in the insect which must thus be the primary host. In the alimentary canal of insects there are found many protozoa or protista closely allied to the forms pathogenic for man. In some cases the association with the insect seems to be one of symbiosis, and the parent insect regularly hands on the symbiont to its offspring by systematic infection of the ovary; this remarkable phenomenon is seen in some of the instances in which there is a secondary life-cycle in the vertebrate, notably in the case of ticks.

In the human diseases here under discussion we must seek the evolution of the parasite not from the ranks of human saprophytes, but from the fauna which normally inhabits biting insects. Such microbes, at first accidentally transferred by the insect's bite or by the defæcation which commonly follows the meal of blood, must have explored the new possibilities lying before them in the same way as I have suggested in the case of the saprophytic bacteria. Doubtless there were many failures, but some succeeded in developing a secondary asexual life-cycle in the blood or tissues of the new vertebrate host. The precarious nature of transfer from the latter back to the insect is met, as often in such instances, by the copious asexual multiplication taking place in the vertebrate host. For the vertebrate cycle is only secondary; to secure the perpetuation of the race the parasite must pass back again to
insect for its sexual cycle. The alternation
insect and warm-blooded animal involves
adjustment of temperature requirements, and
be noted that the diseases in question are in

those of tropical climates where the difference in temperature between mammal and insect is relatively small. As a hypothesis, such a mode of origin of these human diseases is not to me incredible. The complex life-history of the malarial parasite is, it is true, not easy to explain in detail, yet, if we are to explain it at all, it must, I think, be on some such lines as I have ventured to suggest.

### DEFENCE AGAINST MICROBIC INVASION.

I must turn, lastly, to the evolution of the processes of defence against microbic invasion on the part of the host. So long as associated microbes were content to dwell on his surfaces and to subsist on his waste products, no defence was needed beyond a local tolerance of guests which did little harm. But when once they attempted true parasitism the question of defence became urgent, for the life of the host was at stake.

It is fairly certain that the primitive defence lay with the wandering mesoblast, and was phagocytic in nature, since this is already observed to be the case in lowly forms of metazoal life, and seems, indeed, the only mode of defence in invertebrata. Phagocytosis is the normal method of feeding in an amœbæ; free living amœbæ subsist largely on bacteria which, having been engulfed, are disposed of by intracellular digestion. The retention of a power of this kind by the undifferentiated mesoblast of the simpler metazoa offers a natural explanation of primitive phagocytic defence and may be held to be an illustration of the economy of Nature in adapting to a new use a function which originally served a more primitive purpose. There is very little difference between the engulfing and digestion of a bacterium by an amœba and by the polymorphonuclear leucocyte of man; only, in the latter case, the leucocyte is acting in the service of the whole body. There is, indeed, another difference, but it is probably a secondary one. Wright and Douglas showed that the phagocytosis of pathogenic bacteria demands a humoral as well as a cellular element; some property of the blood is called into play to act upon the bacterium before effective phagocytosis can occur—the " opsonic " phenomenon. It is possible that this action is required as a countermove to a defence against phagocytosis evolved by the microbe. There seems, in fact, to be an inverse ratio between the virulence of a bacterium and its susceptibility to phagocytosis.

But the matter is not as simple as this, for there are harmless psychrophil bacteria which demand the opsonic action of serum before they can be taken up by leucocytes, though in others this is not the case. Phagocytosis by leucocytes is not equally important in defence against all pathogenic bacteria, it is pre-eminent against the pyogenic cocci, but relatively subsidiary in the case of bacilli of the typhoid-colon group. It may be said that the degree of circulatory polynuclear leucocytosis seen in an infection is a rough index of the importance of this means of defence against the infecting agent, and I have already pointed out, in discussing inflammation, how great a value attaches to the vascular system as a means of concentrating the wandering mesoblast at the point of bacterial attack.

But we must not limit our view of phagocytosis to the behaviour of the leucocytes. Even in his earlier writings Metchnikoff distinguished between the "microphages," as he called the leucocytes, and the "macrophages"—larger cells wandering or sessile, which we now refer mainly to the histiocytes and reticulo-endothelial system, partly to the lymphatic and vascular endothelia. The phagocytic activity of the macrophages for long attracted less remark than that of the more easily observed microphages, but in recent years renewed attention has been paid to the tissue cells. The removal of bacteria circulating in the blood—for example, after an intravenous injection and presumably also in naturally occurring septicæmias—seems largely owing to phagocytosis by macrophages, especially on the part of the reticulo-endothelial system. Durham long ago showed that, when bacteria are introduced into the peritoneal cavity, the macrophages of that sac were at work before there had been time for the microphages to assemble, and that when the work of the latter had been accomplished the drama was closed by the swallowing up by the macrophages of the microphages themselves with their load of bacteria.

Hence, just as we found inflammation and repair mainly carried out by cells of mesenchymal descent, so too we find them largely instrumental in the defence against microbic invasion.

### HUMORAL DEFENCE.

But the higher animals have evolved other means of protecting themselves without the direct intervention of their cells. It has long been known that when an animal has suffered from a given infection, or when it has been immunised against the corresponding microbe, its serum is wont to exhibit certain new properties antagonistic to the microbe in question. These properties may be of more than one kind, and we are in the habit of personifying them as new substances present in the blood under the name of antibodies. Of these hypothetical antibodies—lysins, agglutinins, and so forth—we know almost nothing beyond their observed effects upon the microbe. We do not even know whether the effects in question are due to separate specific antibodies, or whether they are diverse effects of one single substance viewed from different angles. Until their true nature is revealed in the light of modern physical chemistry, and especially of colloidal chemistry, it is scarcely possible to speculate as to how these properties of the serum have arisen, though there is one tempting line of thought. Such antagonistic properties are seen in the blood not only against bacteria themselves, but against their soluble toxins, and against unformed proteins in general. An invading microbe is, indeed, a protein foreign to the body. Now we know that alien proteins are not tolerated by the body; when taken in as food, they are split up in the digestive tract, and, after absorption, built up again into the normal body proteins. If they are introduced artificially by any other route we know that they are soon got rid of, presumably by some process of parenteral digestion. Proteolytic ferments are of almost universal distribution in the body. When foreign proteins are repeatedly introduced the mechanism for antagonising them appears to be stimulated to increased activity.

It would seem possible that the specific antibodies which arise as the result of microbic infection are a specialised form of this more general property and have been evolved from it, but how we cannot well conjecture in the absence of exact knowledge of the nature of antibodies in general. It is, however, interesting to note that some antibodies at least are held by many to be a product of the reticulo-endothelial system, bringing us back to the mesenchyme as the organ of this form of bodily defence also.

Time fails me to speak any more of humoral defence, even if I had the knowledge to do so. I must be content to have put before you in this lecture many old facts in what I trust may have been to some of you a new light. The bewildering multiplicity of facts which confronts the student of pathology is more readily understood in the light of some general principle. It would be misleading to speak of the evolution of disease, which is a state of disharmony with environment, but if we view the signs and symptoms of disease as manifestations of the efforts of the body to bring itself back once more to perfect adaptation, we can very reasonably regard the varied processes called into play as having been evolved from simpler beginnings. Our admiration of the powers of Nature may well be increased by realising how deftly, in the face of new dangers, she has turned some of the primitive faculties of the cell into means of preserving the body intact.

The vocabulary of every language provides eloquent expression to the fundamental influence of vision in our intellectual life. Its symbolism is predominantly visual—insight, foresight, and the rest. In man's ancestors the increasing reliance upon visual guidance by mammals with plastic undifferentiated—i.e., adaptable hands, made possible the emergence of those progressively expanding powers of discrimination that eventually led to the emergence of the distinctive powers of intelligence. The eyes guided the hands to learn an increasing number of acts of skill. This incidentally cultivated the power of tactile discrimination and correlation between touch and vision. The increasing powers of regulating complex movements eventually conferred upon the cerebral cortex the ability to extend the range and precision of the conjugate movements of the eyes. This created the conditions that are essential before a true macula lutea can develop in a mammalian eye. In addition, it made possible the attainment of stereoscopic powers. I need not repeat that argument again, but I refer to it to call attention to newly realised factors that play a part in the process.

### ITS PART IN POSTURE AND BEHAVIOUR.

The researches of Sir Charles Sherrington and his collaborators, especially Prof. Magnus, of Utrecht, have been responsible for calling attention to other ways in which the eyes come to play a part in the control of posture and behaviour. With the increasing reliance of vision the eyes acquire an influence in the regulation of posture (and the automatically-controlled muscular tone that is an essential part of the maintenance of posture) that is lacking in other mammals. The other posture-regulating mechanisms —labyrinthine, cervical, and cutaneous—are controlled by the brain-stem. The ocular regulation of posture, though automatic, involves the cerebral cortex. It thus becomes more intimately associated with the function of acquiring muscular skill. The eventual attainment of the erect attitude by man is one of the expressions of this enhancement of the influence of vision and the increased part it plays in the regulation of posture and muscular activity in general.

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# SOME REMARKS ON OSTEOMALACIA,

## WITH SPECIAL REFERENCE TO A RECENT CASE.

BY F. S. FOWWEATHER, M.D. LIVERP., M.Sc., F.I.C., D.P.H.,

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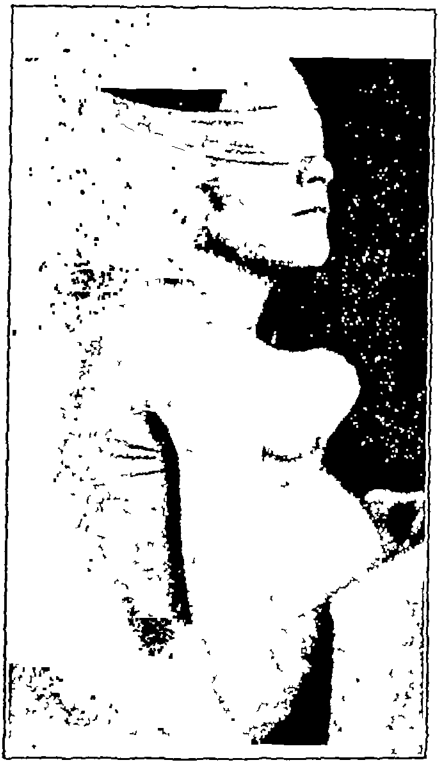
THE case about to be described was admitted to the Leeds General Infirmary in September, 1925. A somewhat full chemical investigation was made and the results obtained appear to be of sufficient interest and importance to be worthy of record.

The patient was a tailoress aged 27. On admission the limbs were thin and wasted, the abdomen very protuberant, and there was marked scoliosis. The most remarkable feature, however, was the extreme distortion of the sternum, which projected forward at an acute angle. These features are illustrated in the accompanying photograph. In addition the terminal phalanx of the right thumb was bent backwards.

She was quite well until 1919, when she complained of backache and some difficulty in walking. She was advised to rest in bed for three months, and at the end of this period she found that she was shorter in height and had lost weight. Difficulty in walking persisted for 12 months. A holiday of two months' duration was followed by considerable improvement, and she resumed work for nine months, but had to discontinue owing to "rheumatism." This occurred in winter, and she has been unable to work in winter ever since. During the past year she has had two attacks of bronchitis, each of about three weeks' duration. For some time before admission she had had attacks of fainting with marked dyspnœa. These attacks came on at irregular intervals and, in view of the subsequent findings, were probably manifestations of acidosis. There was no association of pregnancy with the condition, the patient being unmarried and a virgin.

The X ray report by Mr. H. B. Scargill was as follows:—

"The pelvis shows marked flattening and rarefaction of bone; the neck of each femur has lost its angle (now almost a right angle). Terminal phalanx of right thumb shows deformity. Chest: Nothing reliable can be made out. I do not think there is any doubt about the diagnosis of osteomalacia."



The chemical findings in this case are of considerable interest. They are as follows:—

*Blood.*

| | |
|---|---|
| Sodium .. .. .. .. | 298 mg. per 100 c.cm. serum. |
| Potassium .. .. .. .. | 26·5 „ „ „ |
| Calcium .. .. .. .. | 9·8 „ „ plasma. |
| Magnesium .. .. .. .. | 2·27 „ „ „ |
| Chlorides (as NaCl) .. .. | 556·0 „ „ „ |
| Inorganic phosphorus .. | 3·2 „ „ „ |
| *Non-protein nitrogen* .. | *39·2 „ „ whole blood.* |
| Sugar .. .. .. .. .. | 0·05 per cent. of whole blood. |
| $CO_2$—combining power .. | 42·0 c.cm. $CO_2$ bound as bicarbonate by 100 c.cm. plasma. |

*Urine.*

| | |
|---|---|
| Volume of 24 hours output | 1250 c.cm. |
| Specific gravity .. .. .. | 1012 |
| Titration acidity.. .. .. | 10·92 c.cm. N/10 NaOH per 100 c.cm. |
| Ammonia-nitrogen .. .. | 64·7 mg. per 100 c.cm. |
| Total nitrogen .. .. .. | 670·0 „ „ |
| Ammonia coefficient .. .. | 9·7 per cent. |
| Chlorides (as NaCl) . .. | 5·0 g. per day. |
| Inorganic phosphorus (as $P_2O_5$) .. .. .. .. | 0·86 „ |
| Sodium (as $Na_2O$) .. .. | 2·91 „ |
| Calcium (as CaO) .. .. | 0·29 „ |

*Acetone was present, but was not estimated.*

### *Starvation Acidosis.*

The outstanding features of these results are the low $CO_2$-combining power of the blood together with a lowered sodium and chloride value, with an increased ammonia coefficient and acetone in the urine. There is, therefore, a moderate degree of acidosis. Other interesting features are:—

1. The blood calcium is normal, while the urine calcium approaches the upper limit of normal calcium urinary excretion. Balance experiments by Freund and Lockwood[1] have shown that a definite loss of calcium from the body

*occurs in osteomalacia. A similar loss has been shown to occur in rickets.*

2. The inorganic phosphorus of the blood also lies within normal limits. There is thus no phosphate retention. The excretion of phosphorus in the urine is much below the average.

3. Excretion of many products—e.g., phosphorus, chloride, and nitrogen—is below the average, while the blood concentration of the same substances is normal or reduced. Since the amount of these substances excreted is mainly dependent on the amount absorbed the figures suggest that absorption is not taking place to a normal extent.

4. *The blood-sugar is at an unusually low level.*

The acidosis cannot be due to failure to excrete carbonic acid, though the shape of the patient's chest might suggest inefficient action of the lungs from mechanical causes, for in such cases a marked diminution of the plasma bicarbonate would not be found. Nor is it due to retention of phosphoric acid. It must clearly be due to a ketosis, which, however, is not diabetic in origin. It very closely resembles the ketosis which results from starvation, due to the low level of carbohydrate metabolism which occurs in this condition. The figures quoted may be compared with those obtained by Gamble, Ross, and Tisdall[2] in their study of the metabolism of fixed base during *fasting. For example, on the sixth day of* fasting they obtained the following figures:—

| | |
|---|---|
| Sodium .. .. .. .. | 303 mg. per 100 c.cm. |
| $CO_2$-combining power .. | 45·7 c.cm. per 100 c.cm. plasma |
| Chlorides .. .. .. | 562 mg. per 100 c.cm. |

which are almost identical with those obtained in the present case, or in general terms, there were slight changes in plasma bases with definite depletion of the plasma bicarbonate, the latter being compensated to a slight extent by a diminution of chloride content resulting from a shift of chloride from plasma to corpuscles. They found a considerable excretion of bases in the urine apparently derived from the wasting tissues, except in the case of calcium. In the case of this element the amount excreted during fasting was enormously more than could possibly be derived from destroyed protoplasm, and it must be concluded therefore that calcium was being withdrawn from the bones of the body. Goto[3] has also shown that loss of calcium carbonate from the bones occurs in the experimental acidosis induced by *administration of* mineral acids.

The occurrence of a starvation acidosis such as appears to be present in our case might therefore, if of more than relatively short duration, account for the *osteoporosis, which is the chief clinical feature of* osteomalacia. That osteoporosis occurs to a greater extent in osteomalacia than in other types of ketosis may possibly be associated with the degree of chronicity which *obtains in these cases.*

### *Similarities between Osteomalacia and Rickets.*

Both Sauer[4] and Alwens[5] have put forward the view that chronic under-nutrition is the primary cause of osteomalacia. Pritchard,[6] in a paper dealing with rickets, while noting that acidosis is the essential cause of the bone changes in this disease, put *forward* the belief that all chronic conditions of malnutrition of whatever kind finally terminate in an acidosis, and that all claims on alkaline bases arising in connexion with the neutralisation of this acidosis must be satisfied before those of developing bone are *attended* to.

There is thus a common cause of rickets and osteomalacia—namely, an acidosis resulting from chronic malnutrition—and the differences between the bony changes in the two diseases are due to the fact that in rickets the acidosis is present during the period of bone formation, while in osteomalacia it operates after bone formation is completed.

V. G. and R. H. A. *Plimmer*[7] have shown that an increase in osteomalacia (which they term "hunger osteomalacia") occurred in Austria and Germany towards the end of 1918, under the same conditions that produced *an increase in rickets in children.* They state that no clear connexion had been traced between the osteomalacia of pregnancy and hunger osteomalacia. This connexion has been supplied by Losee and Van Slyke,[8] who have shown that during normal pregnancy a decrease in the alkali reserve of the blood occurs. It is easy to imagine how, in a woman whose nutrition in the absence of pregnancy is at a level bordering upon the *minimum necessary to prevent* acidosis, the further tendency to acidosis which is part of the pregnant condition is a potent factor in determining the onset of osteomalacia. In other words, pregnancy is a potent *factor* in *determining* the onset of osteomalacia in the under-nourished.

Plimmer and Plimmer add another point of similarity between rickets and osteomalacia—namely, that in the 1918 *cases of osteomalacia in adults* the symptoms were at their worst in winter and spring and less severe in summer. This seasonal variation in symptoms is seen in the present case.

### *Chronic Under-nutrition and Acidosis.*

There remains the question as to how a starvation acidosis results from chronic under-nutrition. This may occur either: (1) directly, the diet being of itself insufficient to maintain carbohydrate metabolism at a sufficiently high level; or (2) indirectly, the chronic *under-nutrition* resulting from a qualitative rather than a quantitative diet defect which in its turn causes failure on the part of the organism to absorb and utilise the carbohydrate supplied in sufficient degree for its requirements.

*The second of these appears to be the more probable,* for diets found to give rise to malnutrition are rarely deficient in carbohydrate. The diets involved in the war-time cases of osteomalacia referred to were poor in fat, meat, and fresh vegetables. Unbalanced and deficient diets, aided perhaps by *other unhygienic* conditions, undoubtedly lead to lowered vitality and (possibly by inducing intestinal catarrh, intestinal toxæmia, &c.) to defective absorptive powers. Such defect in absorption is clearly shown by the figures quoted in the present case, and is the immediate cause of the starvation acidosis.

Plimmer and Plimmer believed *the essential cause* of hunger osteomalacia to be a diet deficient in A-vitamin. I consider the cause of osteomalacia, whether of the "hunger" or "pregnancy" type, to be the same as that of rickets, though *I do not* propose to enter the controversy as to how far the latter disease is purely an avitaminosis. In this connexion the work of Cramer[9] is of considerable importance. He holds that the action of vitamins is essentially on the digestive tract, the effect of lack of A-vitamin leading to atrophy of the intestinal mucosa and reduction in blood platelets, while lack of B causes atrophy of the lymphoid elements. Hence all the effects of vitamin deficiency are explainable on the basis of a secondary *deficiency* in absorption (which has been shown to occur in the present case) or to increased local vulnerability to bacterial infection.

It follows that the treatment of osteomalacia must be the same as that of rickets. The healing of bone lesions in adults is *more difficult than* in children, but it is claimed that correction of dietetic and hygienic deficiencies cured the European war-time cases of osteomalacia.

My warmest thanks are offered to Dr. T. Wardrop *Griffith, who was in charge of the* case described, for permission to make this investigation, and for access to the notes.

### *References.*

1. Freund, H. A., and Lockwood, B. C.: Annals of Med., 1920, i., 67.
2. Gamble, J. L., Ross, G. S., and Tisdall, F. F.: Jour. Biol. Chem., 1923, lvii., 633
3. Goto, K.: Jour. Biol. Chem., 1918, xxxvi., 355.
4. Sauer, H.: Deutsch. med. Woch., 1920, xlvi., 45.
5. Alwens: Münch. med. Woch., 1919, lxvi., 1071.
6. Pritchard, E.: New York Med. Jour., 1919, cx., 921.
7. Plimmer, V. G., and Plimmer, R. H. A.: Vitamins and the *Choice of Food*, Longmans, 1922.
8. Losee, J. R., and Van Slyke, D. D.: Amer. Jour. Med. Sci., 1917, cliii., 94.
9. Cramer, W.: THE LANCET, 1923, i., 1046.

# TUBERCULOSIS OF THE LARYNX:

## TREATMENT WITH THE GALVANO-CAUTERY: INDICATIONS; RESULTS; TECHNIQUE.*

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Perhaps the following contribution can be better followed if I at once state the three chief conclusions I have arrived at. They are as follows: (1) as a local help the galvano-cautery is the most valuable remedy we possess at present; (2) the cases in which it is suitable are relatively few; (3) but these cases, well selected, yield a cure in a large proportion of cases.

*Selection.*—No case is ever submitted to the galvano-cautery treatment until sufficient time has elapsed to note the improvement which occurs in nearly every instance from sanatorium treatment alone. A strict silence treatment has also preceded it in all cases where the tubercle is deposited around the margin of the glottis—i.e., the vocal cords, interarytenoid and arytenoid regions (intrinsic type). If situated elsewhere in the larynx—epiglottis, ventricular bands, aryepiglottic folds (extrinsic type)—a preceding period on whispers may be sufficient.

*Preceded by Voice Rest.*—The cautery treatment is employed when the spontaneous healing in the larynx (under silence or whispers), after having made some progress, appears to be stationary or only improving slowly. It is also used in promising cases where the patient is anxious to resume full voice use, so as to gain his livelihood or return to social life, as quickly as possible.

### *Indications and Contra-indications.*

*Local Indications.*—As regards local distribution and type, the case is more promising when the disease is situated on the vocal cords, the vocal processes and the interarytenoid region (the most common sites), and is in a quiescent and not advancing condition. (Figs. 3 to 7.) It is also indicated when the tuberculous deposit is limited to a ventricular band, or aryepiglottic fold (not common areas for solitary lesions), and is of an indolent type. It may be employed when the epiglottis is invaded, provided it be of the chronic or lupoid form. (Figs. 1 and 2.)

*Local Contra-indications.*—It is contra-indicated in the acute, turban-shaped epiglottis, particularly during the evolutionary period, when the surface is intact and the whole cartilage is tense, rigid, distended, purplish-red, and causing acute pain. If this breaks down and subsides into the lupoid, and generally painless type, the cautery may then be called for.

It is dangerous to employ it if the arytenoids are acutely invaded, with massive deposit, or showing pseudo-œdema; or if there is impaired mobility of the cord or pain, as this indicates perichondritis or even trouble going more deeply to the crico-arytenoid joint. I think such cases are only aggravated by the cautery. Pain and dysphagia are generally contra-indications. Although galvano-puncture of the acute epiglottis or arytenoid is sometimes employed, and successfully, to assuage the pain of dysphagia, I have had little experience of it with this object. Such cases do not often come my way.

*General Indications.*—But, alongside of a study of the local conditions, it is always necessary and equally important to consider the patient's whole case as regards lung condition, tubercle bacilli, temperature, resistance, type of disease, and mentality. This, of course, is best done in a well-ordered sanatorium. I have never initiated the cautery treatment until a patient has been at least three months under observation. The method need not be considered if there is unstable temperature, quick pulse, failing weight, or feeble resistance.

It is useless to submit a patient to the strain of this treatment if, in spite of sanatorium care, he is steadily going down-hill. If he has only a year or two to live it is not kind to martyrise him with silence, cocaine, and a certain amount of strain, when his last days might be made more happy by allowing him to go on using his hoarse voice freely.

### *Parallelism of Pulmonary and Laryngeal Disease.*

It is well to remember that laryngeal and pulmonary progress do not always proceed along parallel lines, although they generally do. Disease in the chest may be stationary or advancing while the larynx is improving; or may be improving or arrested while the larynx shows no tendency to heal. On the other hand, the contrary never occurs—i.e., if the disease is unhealed in the larynx the tubercle in the lungs is likely to recur or extend; if it is spreading in the larynx then it will become active in the lungs. A patient with arrested disease in the lungs cannot safely return to daily life if he still has a laryngeal lesion. If his laryngeal tuberculosis is healed he may carry on for many years with tubercle bacilli in his sputum or chronic lung trouble, or his chest may get well.

### *Incidence of Laryngeal Disease.*

The clinical material at my disposal is well displayed in Table I.

Table I.—*Incidence of Laryngeal Disease in Pulmonary Tuberculosis in a Sanatorium.*

| Period. | Total cases. | With laryngeal disease. |
|---|---|---|
| 10 years (1911–21) | 2541 | 477 (18·77 %) |
| 4 years (1921–25) | 1001 | 143 (14·29 %) |
| Total 14 years (1911–25) | 3542 | 620 (17·50 %) |

It will be seen that in the type of case we get in a sanatorium such as Midhurst—i.e., relatively early cases—the larynx is diseased in about 17·50 per cent. of all cases. This and the two following tables are interesting—first, because two periods have been compiled from case-cards by two independent observers; and, second, because, while showing a certain similarity in the two groups—of a former ten-years and a later four-years period—yet they suggest a diminishing frequency of laryngeal disease. This may be because we are now getting the cases earlier in a sanatorium, or because, as I have conjectured in a previous research, laryngeal tuberculosis is diminishing in frequency, both actually and relatively.[1]

Table II.—*Laryngeal Tuberculosis: Proportion of Cases Selected as Suitable for Cautery Treatment.*

| Period. | Cases with laryngeal disease. | Cases cauterised. |
|---|---|---|
| 10 years (1911–21) | 477 | 74 (15·5 %) |
| 4 years (1921–25) | 143 | 29 (20·28 %) |
| Total 14 years (1911–25) | 620 | 103 (16·61 %) |

During 14 years I saw 620 cases of laryngeal disease. Of these cases there were 103 I considered suitable for cautery treatment, a proportion of 16·61 per cent. of all cases. (Let me recall that, as many cases are cured simply by silence or whisper, the number available in which the galvano-cautery treatment need be considered is proportionately restricted.) Table II. shows that in the first ten years nearly 15 per cent. were submitted to the cautery, whereas *in the last four years this proportion has* risen to 20 per cent. This again may suggest that we are getting earlier cases, or more suitable cases, or that increased knowledge has encouraged us to employ the treatment more frequently.

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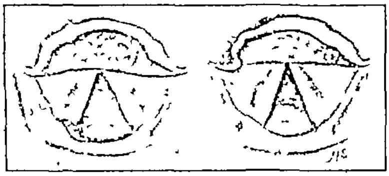
* Read before the Tuberculosis Society at Cambridge on March 26th, 1926.

[1] StClair Thomson: Tuberculosis of the Larynx, Medical Research Council, H.M. Stationery Office, 1924.

FIG. 1. FIG. 2.



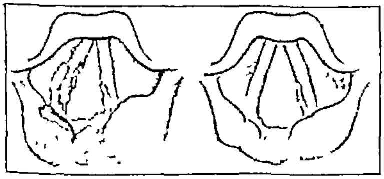
No voice change Indolent type. Cured by whispers and cautery.

FIG. 1.—Male, aged 26. T.B.+. Group 3 Right lung, two apices; left lung, one apex. Deposit above right vocal process; deposit in right aryepiglottic fold, with two superficial ulcers. Ulcerating deposit on petiolus of epiglottis, deposit in right half of epiglottis.

FIG 2—Same case as Fig. 1 after whispers and three cautery treatments. Inspected nine years afterwards, larynx remains *healed, as in this picture, which shows stellate scar on petiolus* and a scarred and shrunken right half of epiglottis.

*Number and Frequency of Treatments.*—In the patients of the first decade, with 46 cured cases, there were *ten who only required one treatment*, nine who required two, and 11 who required three. The remainder required four, five, six, and seven treatments. The cases averaged 3·2 applications. Careful records have been kept which enable me to say that a case may require anything from one to six treatments, and that a month is the average suitable interval between *each application. There was only one case*, out of 46, which required more than seven treatments.

FIG. 3. FIG. 4.



Extensive disease. *Fair general condition.* Cure under silence, whispers, and (to expedite healing) two cautery treatments.

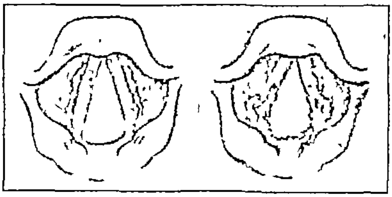
FIG 3.—Male, aged 31. T.B.+. Group 2. Right lung, two apices; left lung, one apex. Right arytenoid is infiltrated and left shows pseudo-œdema, but neither is breaking down. Infiltration and ulceration of all right cord, edge of right ventricular band, interarytenoid region and posterior half of left cord. Admitted June, 1913. Afebrile except for two weeks. On discharge in August, 1914, there were no T.B., the disease in the lungs was arrested and the larynx had slowly but steadily improved.

FIG. 4—Same case as Fig. 3 one and a half years later—i.e., in December, 1914 The right arytenoid, the interarytenoid regions, and the right cord are now healed. There is some thickening of the left arytenoid and aryepiglottic fold, but no ulceration. The left cord is healed except for a boat-shaped ulcer over the vocal process. It was only to expedite the healing of the little disease remaining that two cautery treatments were given in November and December, 1914. In March, 1915, the larynx was quite healed. It remained so when inspected in February, 1923, ten years after entering Midhurst, and eight years after the last galvano-cautery treatment.

### *Results.*

The experience of the first ten years showed a cure in 62 per cent. of cases. (Table III.) In the last four years this has risen to nearly 60 per cent., either because the cases are better selected, or are of an earlier and more favourable type. In my first ten years of sanatorium work we secured by silence, whispers, or the galvano-cautery a lasting cure of 119 out of 477 cases of laryngeal tuberculosis, or 25 per cent.

FIG. 5. FIG. 6.



Cured with silence and cautery (three treatments).

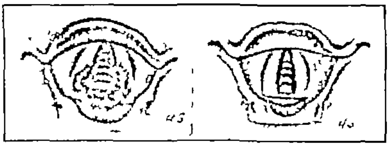
FIG. 5—Male, aged 31. T.B.+. Group 2. Right lung, one apex. Febrile for first 16 weeks. Admitted February, 1915, and discharged September, 1915. This drawing was made in June, 1915, and shows catarrhal and abraded cords, with deposit in both ventricular bands and ulceration along their margins. Silence not carried out as strictly as required. No progress as regards lung or general condition.

FIG 6—Same case as Fig. 5, but five months later—Dec. 2nd, 1915. Readmitted with the same lesion in right lung, and now with two apices in left Disease in larynx increased, the posterior half of both cords being deeply ulcerated. Treated with strict silence and the galvano-cautery (three applications), left sanatorium cured on June 13th, 1916, with T.B.—. Afterwards served with army in France and remains well seven and a half years afterwards.

### *Technique.*

The treatment is carried out by the indirect method of laryngoscopy. It is a great pity that the younger laryngologists of to-day neglect to train themselves in this procedure, as they are in such haste to carry *out any intralaryngeal surgery by the* easier, quicker, but much more painful performance of the direct or Killian method. The latter is not *only unnecessary*, but quite unsuitable for a tuberculous patient.

FIG. 7. FIG. 8.



Stenosis after much galvano-cautery treatment requiring tracheotomy.

FIG. 7.—Female. T.B.+. Group 3. Picture in 1911. *Ulcerating* deposit of interarytenoid region and posterior half of both cords Had 14 treatments with the galvano-cautery. See description of case.

FIG. 8.—The same case as in Fig. 7. Picture in 1923. Larynx quite healed, but with scarring in the interarytenoid region and the posterior commissure. This requires the wearing of a tracheotomy tube, but does not prevent her from managing a post office. No T.B. Lungs quite healed.

*Anæsthesia.*—Complete local anæsthesia of the larynx and good control of the laryngeal reflexes are necessary. The pharynx is first well sprayed with a 2½ per cent. solution of cocaine. A few minutes are allowed for this to act, and then a 10 per cent. solution (to which a few drops of adrenalin have been added) is dropped from a laryngeal syringe along the margins of the epiglottis and on to each arytenoid eminence (Fig. 9). After a lapse of three or four minutes ten drops of the same solution are trickled down over each ventricular band, and this is followed by squirting 10 to 20 drops into the larynx, at the moment that the patient utters a prolonged "E." (Of course, this is all done under the control of the laryngeal mirror, the patient holding his own tongue so as to leave the laryngologist with his two hands free.)

TABLE III.—*Laryngeal Tuberculosis treated with Cautery: Proportion of Cases Cured.*

| Period. | Larynx cauterised. | Larynx cured. |
|---|---|---|
| 10 years (1911–21) | 74 | 46 (62·1 %) |
| 4 years (1921–25) | 29 | 20 (68·97 %) |
| Total 14 years (1911–25) | 103 | 66 (64·08 %) |

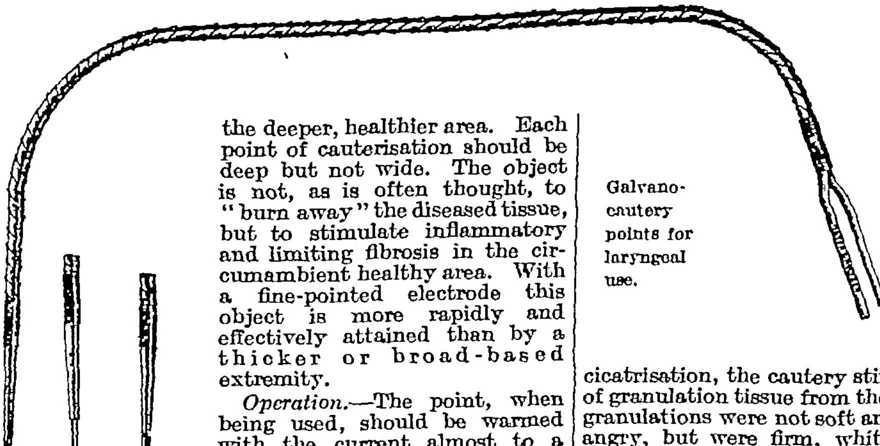
In this way the margins and cavity of the larynx are rendered so insensitive that after another four or five minutes it is possible to introduce a laryngeal cotton-carrier into the larynx and quietly apply a 10 per cent. solution (or, if need be, a 20 per cent. solution) to the exact spots to be cauterised.

This method of securing complete anæsthesia generally requires, from start to finish, about 15 to 20 minutes. Attempts to shorten the induction of anæsthesia are apt to spoil the whole proceeding. If the application is started before the larynx is well prepared, the sitting may prove a fiasco. Still, some patients will continue to make gagging efforts until told authoritatively that insensitiveness is now complete and that they will feel nothing. Confidence and suggestion help in the result.

In nervous and apprehensive patients a dose of 20 gr. of bromide may be given an hour beforehand, but a hypodermic of morphia (gr. ¼) and atropine (gr. 1/200) is more effective. As a rule, neither of these sedatives is required at Midhurst.

*Cautery Instrumentation.*—The cautery extremity is always of the one type, a fairly sharp-pointed platinum. (Fig. 10.) The object is to penetrate swiftly through the margin of the diseased area so as speedily to reach the deeper, healthier area. Each point of cauterisation should be deep but not wide. The object is not, as is often thought, to "burn away" the diseased tissue, but to stimulate inflammatory and limiting fibrosis in the circumambient healthy area. With a fine-pointed electrode this object is more rapidly and effectively attained than by a thicker or broad-based extremity.

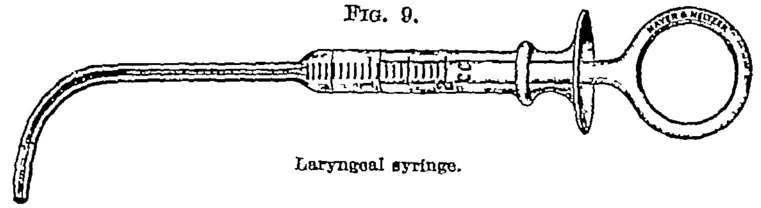
FIG. 10.



Galvano-cautery points for laryngeal use.

*Operation.*—The point, when being used, should be warmed with the current almost to a white heat. It is not sufficient to have it at the "cherry red" degree of heat we are accustomed to employ when making the more superficial cauterisation in the nose and pharynx. For the deep galvano-caustic puncture required in laryngeal tuberculosis, the platinum point at an almost white heat will penetrate more quickly and effectively, and can be as rapidly withdrawn, without fear of its adhering to the tissues. At a red heat the penetration is slower and more *painful*; more diffuse heating and consequent reaction is produced and, on starting to withdraw a point *at red heat, it* is often found to be adherent to the charred tissues, so that, in detaching it, part of the eschar comes away and bleeding may be caused. The current is not switched on until the point is just touching the spot to be heated. Then contact is made and the point is firmly pressed through the margin of an ulcer or deposit until it is felt that its deeper progress is being arrested—as occurs when healthy tissue is reached. Here it is held for a few seconds (five to ten) until it is seen or felt that a free, deep, black shaft has been burned. The electrode is then withdrawn from the tissues into the lumen of the larynx, before the electric current is switched off by releasing the contact on the cautery handle. Two to six such punctures are made at one sitting. In the case of one vocal cord, for instance, three such deep applications may be required, one towards each end and one through the centre. It is better to make one or two punctures at the right points and thoroughly, than three or four incomplete or partially successful applications. The number at each sitting must be determined by the operator's skill and the patient's reaction.

FIG. 9.



Laryngeal syringe.

*Immediate Result.*—There should be no marked ill-effects from this treatment. A short rest, and a cup of coffee or tea, to counteract any depression from the cocaine, is all that should be necessary. A dose of bromide or aspirin might be required to calm agitation, or a hypodermic of morphia.

Silence should be enforced for three to five days and then whispers until the next sitting or until the eschar falls and the burn heals. No topical measures do anything but irritate a larynx requiring rest. In the majority of cases there were no ill-effects. When I make these applications in private practice the patient is able to come up to London and return to the country in the same day.

A general anæsthetic is, of course, quite uncalled for in this treatment.

### *Occasional Sequelæ of Galvano-cautery Treatment.*

(*a*) *Redundant Granulations.*—In a few cases, including some which ended in satisfactory cicatrisation, the cautery stimulated a free outgrowth of granulation tissue from the diseased surface. These granulations were not soft and gelatinous, nor red and angry, but were firm, white, and rather avascular, looking somewhat like warts as seen on the skin. They were chiefly in my earlier cases, and were, I think, caused by inserting the cautery point in the centre of the ulcer instead of along the margin. In the diseased area the cautery throws up these granulations; along the border line it only stimulates fibrosis. The production of these indolent and firm granulomata had no bad effect further than retarding the progress of the case. Some time, even months, had to elapse before they subsided.

(*b*) *Stenosis.*—In only two cases could troublesome stenosis be attributed to the use of the galvanocautery. The first was a long and inveterate case in a young woman of 29, who was admitted in 1911 with tubercle bacilli in sputum, symptoms in two lobes of the right lung, and ulcerating deposits in the interarytenoid region and the posterior thirds of both vocal cords. (Fig 7.) She had a long course of tuberculin without benefit. In 1912 the galvanocautery was started, but as the circumstances did not permit of continued treatment the applications were spread over six years, during which time she had 14 sittings The last was in 1917 when the lung was well fibrosed, bacilli had disappeared from her sputum, the voice was satisfactory, and the larynx well cicatrised. She had a good glottic airway and returned to her occupation in the post office; three years later the patient was shown before the Royal Society of Medicine [1] But towards the end of 1921 she began to complain of dyspnœa, and it was seen that this was due to contraction of the scar-tissue in the interarytenoid region (Fig. 8.) She declined a tracheotomy until Oct. 12th, 1922, by which time she could hardly walk a mile, dare not climb the stairs of an omnibus, and had commencing stridor. A low tracheotomy was carried out under local anæsthesia. She has since gained 7 lb. in weight, can now walk five or six miles, talks easily with a speaking-valve in her cannula, and manages a country post office Her lung trouble remains quite arrested. She is now aged 44; it is 13½ years since her last sojourn at Midhurst. This laryngeal stenosis only set in four years after the last application of the galvanocautery. The patient, wearing her tracheotomy tube, was again shown before the Section of Laryngology, Royal Society of Medicine, on May 4th, 1923—seven months after the performance of the tracheotomy.[2] She remains well and active, three years and a half after the introduction of her tracheotomy tube.

In the second case the patient had had tubercle bacilli in the sputum for two years The right side of the larynx was immobile from infiltration of ventricular band and arytenoid, with ulceration of all right cord and posterior half of left Cautery treatment was started in August, 1923 She had in all six applications, the last being in June, 1924. Stenosis required a tracheotomy in October, 1924 She still wears the tube, the larynx is quite healed, there is no sputum, the lungs are arrested, and she is able to carry out her household duties.

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[1] Proc. Roy. Soc. Med. (Sect. Laryngol.), 1921, xiv., 64.
[2] Proc. Roy Soc. Med. (Sect. Laryngol.), 1923, xvi., 64.

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SUPERVISION AND COMPENSATION OF SMALL-POX CONTACTS.—On March 10th questions were asked in the House of Commons about the refusal of the Ministry of Health to sanction the payment by a local authority of compensation to certain miners who, owing to the danger of infection from small pox, were restrained by a medical officer of health from following their employment (THE LANCET, March 20th, p. 633). The Assistant Secretary to the Ministry has now sent to sanitary authorities a circular which draws their attention to Circular 350 of Nov 6th, 1922, and Memorandum 71a/Med., and continues as follows: "The Minister finds that in certain cases local authorities, in dealing with outbreaks of small pox, still think it necessary to quarantine in their homes the inmates of dwellings invaded by the disease or to direct such inmates to refrain temporarily from continuing their ordinary employment, with the result that the local authorities are faced with claims for compensation for loss of wages by the persons so dealt with. I am again to draw the attention of the authority to Section 7 of Memorandum 71a/Med., and to state that the Minister is advised that, save in the exceptional cases noted in paragraph (3) of that section, it is not necessary for persons who have been in contact with a case of small pox to abstain from following their usual occupations. I am also to remind the authority that there is no legal authority for the payment of compensation in these circumstances, and it must not be expected that the Minister would be willing to sanction any such payment under the Local Authorities (Expenses) Act, 1887, in a case in which he was advised that the steps taken by the authority were not necessary for the protection of the public health."

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# THE LATE RESULTS OF OPERATION FOR CHRONIC PAINFUL HIP.*

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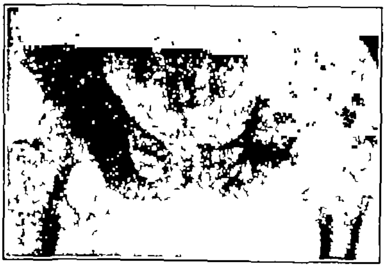
AT first sight the title of this paper may appear somewhat latitudinarian and unscientific. When, however, one considers the limitations and vagueness of our knowledge of the several pathological changes which may cause chronic pain in the hip-joint, one must allow that an indefinite title is in some measure justifiable.

I do not propose, however, to include any consideration of tuberculous infection of the joint, although cases of this nature would come under the category of chronic painful hip. The omission of these conditions is desirable, I think, as the infective factor in them assumes an importance in relation to operation and its results which is not present in other forms of chronic arthritis. For similar reasons and on account of its rarity I shall not discuss syphilitic arthritis.

FIG. 1.



Bony ankylosis of left hip in slightly adducted position, following operation for hypertrophic osteo-arthritis.

For practical purposes this leaves for consideration the late results of cases of chronic arthritis of the hip-joint of a kind which will fall under one of the three following headings—viz.: (1) Primary monarticular osteo-arthritis (hypertrophic and atrophic forms). (2) Chronic arthritis secondary to fracture of the neck of the femur or of the acetabulum. (3) Polyarticular arthritis involving the hip (including rheumatoid arthritis and borderline cases).

Any discussion as to the class of case suited to operation does not come under consideration, and I will therefore proceed to classify the operative procedures which may be employed in these cases and indicate the results which have been recorded in relation to them. I will conclude by giving my own personal experience in a limited group.

Four operative procedures are sufficiently well recognised to merit consideration—viz.: (1) arthrodesis of the hip-joint; (2) excision of the head of the femur; (3) cheilotomy; (4) arthroplasty.

### *The Choice of Operation.*

The choice of operation in this joint is less dependent on the anatomical condition of the joint or ætiology than on the age and general condition of the patient. In the young and middle aged the aim should be not only to remove pain, but to provide a stable joint. This can be most effectually done by producing bony ankylosis at the joint line An *arthrodesis* is most certainly produced by a complete erasion of the joint, followed by fixation in plaster-of-Paris in the position of election for a sufficient time to allow bony union to occur. This procedure was first advocated by *Albee*[1] in 1908. In his early series he merely rawed the upper surface of the femur and corresponding aspect of the acetabulum. Latterly he has adopted a more thorough exposure of the joint, and further ensures bony ankylosis by the insertion of an autogenous bone graft. In the series of cases, the results of which I report later, I have usually dislocated the head of the femur and carried out an erasion of the joint.

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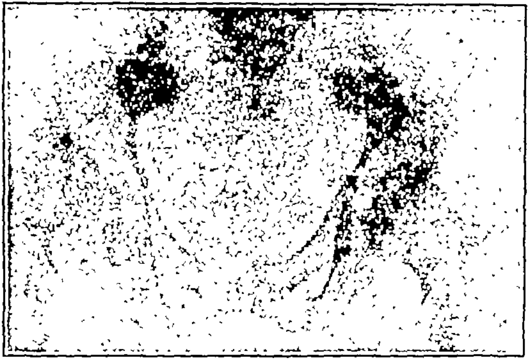
* Read before the Orthopædic Section of the Royal Society of Medicine on March 2nd, 1926.

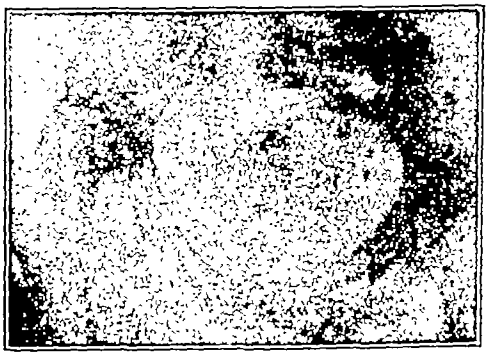
FIG. 2.



Fibrous joint. Right hip following operation for hypertrophic osteo-arthritis.

This operation must be regarded as a severe one, though in my experience it is not associated with much shock. It is the prolonged after-fixation in plaster-of-Paris in the recumbent position which is found most trying by the patient. The functional results of a fixed hip in a satisfactory position are remarkably good in the younger subjects. The most serious disability noticed by the patient is, as a rule, the difficulty he experiences in doing up his boot on the side affected.

FIG. 3.



Fibrous joint. Right hip after operation for partially dislocated head of femur following chronic arthritis.

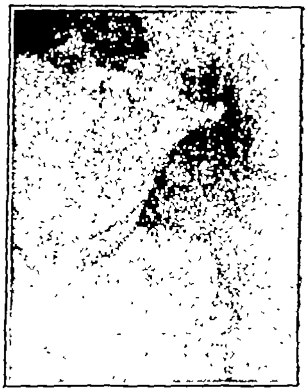
In reviewing the later results, it is noticeable that elderly subjects sometimes develop pain in the lumbar spine and sacro-iliac joints after an arthrodesis of the hip. The fixation of the hip undoubtedly imposes a serious strain on these joints. I have noticed that pain of this character is most prominent in the first year or two after operation and generally diminishes rather than increases later.

In elderly feeble patients an arthrodesis is not usually attempted. A simple *excision of the head of the femur* has been most often favoured. Sir Robert Jones[2] advises the production of a pseudo-arthrosis at the base of the neck of the femur without touching the diseased joint. Both these latter operations relieve pain, but leave a joint of poor stability, and mean that the patient is left dependent on the use of crutches or a walking caliper.

The more conservative procedure of *cheilotomy* (Sampson Handley) is suited to but few cases, and it cannot be expected to give a lasting cure. Platt advocates a partial excision of the head of the femur, leaving sufficient bone to engage the upper rim of the acetabulum. This leaves, in favourable cases, a stable joint with fair mobility.

In my own experience the operation of erasion of the joint has been well tolerated by old patients, and I have merely varied the after-treatment in their cases by making no attempt at rigid fixation in plaster-of-Paris. A painless fibrous ankylosis or pseudo-arthrosis is in this way obtained in a relatively short time; the hip is stable, but there is a tendency to the development of an adduction deformity.

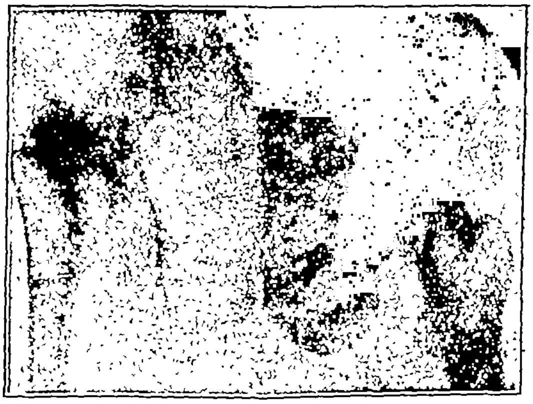
FIG. 4.



Ankylosis of left hip after operation for traumatic arthritis following a fracture of the acetabulum and ilium.

The performance of a formal *arthroplasty* in the case of the hip-joint is a doubtful policy, and is hardly necessary in cases of osteo-arthritis. As stated above, a useful range of movement at the hip is obtained by an erasion or partial excision of the joint followed by suitable after-treatment. Indeed, it is not easy to secure a sound bony ankylosis at the hip-joint, as is made clear by the results seen in Table 1. This experience falls in line with the frequency with which a pseudo-arthrosis is formed after an unimpacted intracapsular fracture of the neck of the femur. This suppression of new bone formation within the joint may be attributed to the exposure of the broken surfaces to the influence of synovial fluid; the same condition prevails after an erasion or excision of the hip for a non-inflammatory condition.

FIG. 5.



Fixation of femur in good working position after operation of excision of the head for a painful ununited fracture of the neck.

### *Factors in the Production of Adduction Deformity.*

In examining the later results (Table 1) of cases of operation on the hip-joint, the tendency to the development of an adduction deformity is striking. This deformity results in serious functional shortening of the limb, from tilting of the pelvis when the erect attitude is assumed. As it is manifestly a complication to be avoided it is worth while to examine the factors which are responsible for its production.

Adduction deformity is a notable feature in any case of destructive disease of the hip-joint. It appears to be due to at least two causes: (1) The proportionately excessive wasting of the gluteal muscles, which lie in intimate relation to the joint; the adductors, which are normally the master group, are at a greater distance from the articulation and do not suffer so severely. (2) The abducting power of the gluteal and tensor fasciæ femoris is reduced by the shortening of the lever (the neck of the femur) through which they act. Both these factors are operative in some degree after the operation under consideration. First, the muscles may be mechanically damaged or the nerve-supply interfered with if the incision is not carefully planned; secondly, any considerable removal of bone from the head of the femur, or unusual deepening of the acetabulum, will shorten the lever through which the muscles act.

The problem of avoiding the secondary development of adduction after operation only arises when a fibrous joint is the result. If firm bony ankylosis is obtained in a good position by means of proper fixation the difficulty does not arise; but it should be remembered that sound bony union is not always obtained, however carefully the operation may be carried out, and that union, apparently firm, if due to fibrous tissue is liable to gradual stretching.

In all cases, therefore, of operations of this nature the two simple mechanical factors above enunciated should receive attention—viz.: (1) preservation of the full function of the gluteus medius and minimus and tensor fasciæ femoris, and (2) the preservation of the neck of the femur at as full length as possible. In practice the adductors may be weakened by section of their tendons, followed by forced abduction of the thigh. To correct the result of shortening of the neck of the femur, Whitman[3] advocates the reimplantation of the bony insertion of the gluteus medius and minimus into the shaft of the femur a couple of inches below the normal position of the great trochanter. I have no experience of this procedure, but it seems to be based on sound lines.

### *Late Results of Operation.*

When one comes to estimate the value of late results of these various operations the view of the patient and that of the surgeon differ somewhat. The former is well satisfied if he loses his pain and is left with a limb whose functional value is not worse than before operation. The surgeon, on the other hand, recognises that the removal of the pain is readily effected and looks rather for an improvement in the functional value of the limb. In either case the true merit of the procedure can only be fairly assessed by a study of the results some years after operation. This particularly applies if operation is undertaken during the active period of the patient's life, when the resulting function of the limb is almost as important as the relief of pain.

The evidence in the literature on the subject is somewhat meagre, only a few authors having published the details of the late results of any considerable number of cases. The outcome of operations aiming at arthrodesis has received the most attention.

Ozarki[4] in 1917 records the results of the arthrodesing operation of the hip in 10 cases of polyarticular arthritis and 16 of the monarticular variety. The same cases were reported on a few years later. In 1920 Spiers,[5] in a careful survey of the late results of all the cases operated on between 1908 and 1920 at Brackett's clinic, sets them out in tabular form as follows:—

| | | | |
|---|---|---|---|
| Operated on .. .. | 34 cases | Youngest .. .. | 22 years. |
| Examined later and reported .. .. | 25 ,, | Oldest .. .. | 61 ,, |
| Average age .. .. | 46 years. | Mortality .. .. | 2 cases. |
| | | Average interval since operation .. | 4½ years. |

*Results of Examination.*

| Union. | Cases. | Position. | Cases. |
|---|---|---|---|
| Union firm .. .. .. | 17 | Adduction present in .. | 18 |
| ,, doubtful .. .. | 3 | Normal .. .. .. | 4 |
| Non-union .. .. .. | 5 | Abduction present in .. | 3 |

He found that in the cases unrelieved by operation arthrodesis had not been secured. Albee,[1] in 1921, reported that he had operated on 128 cases with satisfactory results. Details of these cases in regard to the technique of operation and the late results are not published.

The results of the operation of excision of the head of the femur for this condition have not been reported in any large series. Individual experience appears to vary. Pain is relieved in all cases, but the functional value of the joint is reported on as a whole unfavourably, considerable shortening being the rule and stability uncertain (Fock, Zezas, Müller, and Hoffa).[6,7,8,9] Platt has reported to me that he has carried out a modified excision in some 20 cases. He considers that though pain is thereby relieved surely the average function given by this operation is disappointing.

Turning now to my personal experience, I have operated on 57 cases of chronic arthritis of the hip from 1919 to date. The first of these cases formed the basis of a detailed report which I put forward in a Hunterian lecture read in 1924[10]; the following results are an amplification of those published on that occasion.

The series is made up of the following types: monarticular osteo-arthritis, 48; polyarticular osteo-arthritis, 2; traumatic osteo-arthritis, 7. In the 48 cases operated on for chronic arthritis an erasion of the joint was effected by one of the methods previously described in 47. After-treatment was carried out with a view to obtaining bony ankylosis in 38 cases, and a fibrous joint in 10. Eleven of these cases were operated on in 1925, and therefore are of no value in assessing the late results.

TABLE 1.—Total cases to January, 1926, 57. 46 cases operated on at least a year ago.

| Condition of joint. | Position. | Pain in hip. | Funct. Short. | Funct. Value. |
|---|---|---|---|---|
| Bony ankyl., 26<br>? ankyl., 7<br>Fib. joint, 13 | Normal, 8<br>Adduct., 35<br>Abduct., 3 | Absent, 38<br>Slight, 8 | Aver.<br>1 3 | Good, 28<br>Fair, 13<br>Poor, 5 |

Ankyl. = ankylosis. Fib. = fibrosis.

TABLE 2.—Functional results in regard to age (46 cases).

| Age 20–49. | | | | Age 50–75. | | | |
|---|---|---|---|---|---|---|---|
| Cases. | Good. | Fair. | Poor. | Cases. | Good. | Fair. | Poor. |
| 22 | 18 | 4 | nil. | 24 | 13 | 7 | 4 |

As might be expected the functional results are more often satisfactory in the younger patients.

TABLE 3.—Relation of Fixation to Function (46 cases).

| Condition of joint. | Cases. | Good. | Fair. | Poor. |
|---|---|---|---|---|
| Ankylosis .. .. | 26 | 24 | 2 | — |
| ? ankylosis .. .. | 7 | 4 | 3 | — |
| Fibrous joint .. .. | 13 | 3 | 6 | 4 |

Table 1 gives in outline the late reports of the 46 cases in which operation was carried out between January, 1919, and January, 1925. The average age of these cases was 47·5, the oldest was 73 and the youngest 24. The results tabulated were obtained by clinical and X ray examination made at least a year after operation. The reports on six of these cases are not recent as I have lost touch with the patients. Two cases have died a year or more after operation. The statements in regard to the absence of pain are

LANGE AND GLOBULIN TESTS BEFORE AND AFTER MALARIA.

| Case. | Original test. | | Second reading. | | | Third reading. | | |
|---|---|---|---|---|---|---|---|---|
| | Lange. | Glob. | Period since malaria. | Lange. | Glob. | Period since malaria. | Lange. | Glob. |
| 1 | 5555554321 | + | 15 months. | 4555554433 | + – | — | | |
| 2 | 4555554321 | + | 23 " | 0034321100 | – | — | | |
| 3 | 5555554322 | + | 17 " | 3455543100 | – | 22 months. | 1334552100 | – |
| 4 | 5555555543 | + | 19 " | 2345554300 | – | — | | |
| 5 | 5555556422 | + | 18 " | 1155553100 | + | 24 months. | 0032110000 | – |
| 6 | 5555554321 | + | 20 " | 0234331000 | – | 26 " | 0234322100 | – |
| 7 | 5555543210 | + | 10 " | 1333311000 | – | — | | |
| 8 | 4555543300 | + | 15 " | 0245544321 | + | 26 months. | 0112221000 | – |
| 9 | 5555532000 | + | 11 " | 5555554430 | + | 15 " | 0123432200 | – |
| 10 | 5555533100 | + | 12 " | 0123322200 | – | — | | |
| 11 | 5555420000 | + | 17 " | 0123322100 | – | — | | |
| 12 | 5555542100 | + | 15 " | 0133332100 | – | 21 months. | 0011100000 | – |
| 13 | 4555552110 | + | 21 " | 3555554000 | + | — | | |
| 14 | 5555541000 | + | 8 " | 0354432000 | + | 13 months. | 4555531000 | – |
| 15 | 5555431000 | + | 10 " | 0112332100 | – | 16 " | 0112221000 | – |
| 16 | 5555555410 | + | 14 " | 0155432000 | – | — | | |
| 17 | 5555551100 | + | 13 " | 0023321100 | – | 19 months. | 0003320000 | – |
| 18 | 5555542100 | + | 16 " | 0244322000 | – | — | | |
| 19 | 5555541000 | + | 14 " | 0123444310 | – | 21 months. | 0111332000 | – |
| 20 | 5555554100 | + | 14 " | 4555553311 | + | 20 " | 5555553320 | – |
| 21 | 5555555543 | + | 14 " | 1255433000 | – | — | | |
| 22 | 1155555510 | + | 13 " | 5555544300 | + – | — | | |
| 23 | 5555310000 | + | 12 " | 0344433000 | + – | 17 months. | 1233332100 | – |
| 24 | 5555431000 | + | 12 " | 4555544320 | + – | 18 " | 4555543200 | – |
| 25 | 5555553100 | + | 9 " | 2455421000 | – | — | | |
| 26 | 5555554210 | + | 9 " | 5555552110 | + – | — | | |
| 27 | 5555555430 | + | 3 " | 5555555432 | + | 10 months. | 5555555552 | + |
| 28 | 5555554200 | + | 4 " | 4555553320 | + – | 10 " | 5555554320 | – |
| 29 | 5555553200 | + | 2 " | 5555544320 | + | 8 " | 5555543210 | – |
| 30 | 4555555320 | + | 2 " | 4555554321 | + | 8 " | 3455543211 | + |
| 31 | 5555554310 | + | 2 " | 4555555543 | + | 7 " | 5555555543 | – |
| 32 | 4555555430 | + | 3 " | 1345542200 | + – | 6 " | 0233344321 | + – |
| 33 | 5555554322 | + | 2 " | 5555552210 | + – | 6 " | 5555555443 | + – |
| 34 | 4555553200 | + | 4 " | 5555553220 | – | — | | |
| 35 | 5555554310 | + | 14 " | 3555544220 | + | 18 months. | 3445543100 | – |
| 36 | 5555555432 | + | 3 " | 5555554320 | – | 8 " | 5555554320 | – |
| 37 | 2555543000 | + | 9 " | 2555555300 | + | — | | |
| 38 | 5555431000 | + | 7 " | 2444433211 | + – | — | | |
| 39 | 5555542100 | + | 18 " | 5555554420 | + – | 22 months. | 5555554420 | + – |
| 40 | 5553322100 | + | 15 " | 3335444300 | + | — | | |

+ – Weakly positive.

had so much improved that he was discharged on trial, and continues to do well at his ordinary work.

From the two cases quoted it will be seen that the actual conversion of the colloidal gold reading cannot be said to have a real bearing upon the mental condition. Possibly, however, on the physical side one is more able to give a general opinion that with the disappearance of globulin, the reduction in the number of cells, and the reduction of the "reducing power" of the fluid, one may expect some improvement in health. In support of this, perhaps two cases may be instanced.

CASE 5, admitted in extremely poor health and with faulty habits, showed positive globulin, increased cells, and a reading of 5555555432. Now, 24 months after the termination of malaria, he is in good health, working in the wards and grounds, and is scrupulously tidy and clean in person. His cerebro-spinal fluid shows a negative globulin reaction, marked reduction in cell count, and a reading of 0032110000.

In contrast, Case 27, admitted in somewhat similar condition with readings 5555554300, markedly positive globulin and increased cells, shows a very marked deterioration in his physical state with readings 5555555552, and a positive globulin and larger number of cells.

It is true the latter case has only been treated within the last ten months, but his condition will not respond to any attempted treatment.

In the alteration in readings it has been repeatedly noticed that the change commences at the paretic end of the curve, and this is the more worthy of note, as so frequently the reduction of the first or first and second tubes is held up by the presence of sero-albumin, whilst when a change is found in the reading it is frequently coincident with the disappearance of demonstrable globulin. Apparently, therefore, when the reading is so little altered in the Lange's gold sol, in spite of a negative globulin reaction, the balance between the precipitating action of the globulin and the protective action of the albumin on the gold solution has been disturbed.

We have not found that the induction of a second series of malarial pyrexia has any marked quickening effect on the alterations taking place in the fluid, and are inclined to consider that where a change is evidenced in a reading taken after such a second attack, it is due to the interval which has elapsed since the first malaria; in other words, that the effect on the fluid of the first malaria is still going on. We have administered arsenic in various forms on the conclusion of the pyrexia, mainly in the form of "914," but cannot find any evidence of the "clearing" of the cerebro-spinal fluid thereby. Case 33 has received in all 5 g. intravenously, and he shows as yet no appreciable alteration in the fluid. The number of rigors sustained does not seem to have any effect upon the cerebro-spinal fluid, because Cases 15 and 23 had respectively 10 and 2.

It has been of interest to us to compare the results obtained by the globulin and Lange's tests with those shown by the acetic-anhydride method. At present we are endeavouring to combine the three in reading results, but frequently find that a known general paralytic shows anything but a true paretic curve, negative globulin, diminution in the cell count, and yet gives a positive reaction to the acetic-anhydride test after malarial therapy. Whether this would indicate the presence of a neuro-syphilis we are not in a position to say, as the chemistry of the test seems to be quite unknown. The fact, however, remains that if the case from which the reading was obtained was unknown, the diagnosis from the Lange's test would in all probability be that of neuro-syphilis.

We are again indebted to the medical superintendent for his kind permission to quote hospital material.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF SURGERY.

A MEETING of this Section was held on Wednesday, June 2nd, Sir LENTHAL CHEATLE, the President, occupying the chair.

Dr. W. E. GYE gave a communication on the

### ORIGIN OF TUMOURS.

He said that the subject belonged to that group in regard to which there were almost as many opinions as there were medical men. To put forward an entirely new view required some courage. But when he first submitted to the profession the ideas which he held at the present time, it was not so much a matter of courage as of bland ignorance of the tenacity with which current views were held by most people, and particularly by pathologists. What could be regarded as the orthodox view of the origin of cancer was what was known as the cellular hypothesis. Candidly, he did not know what that meant, though he had tried to ascertain what it was held to mean by personal inquiry and by reading. Still, it was easy to understand why the so-called cellular hypothesis was held so firmly—even dogmatically—by pathological anatomists all over the world. Apparently, the general meaning of that hypothesis was that the ultimate explanation of the essential features of tumours would be found in some change in the internal growth mechanism of the cell. It was held that this change might be induced by many kinds of things, such as by the action of tar and other chemicals, or by the action of worms, or by an invisible virus in the case of certain fowl sarcomata. Underlying the dogmatism with which such views had been expounded was a radical misuse of the word "cause." Pathological anatomists employed that word in a sense other than that in which it was used in ordinary medicine—i.e., the bacillus of Koch as the cause of tuberculosis. In medical speech one meant by the word "cause" factors invariably present in the disease. Contributory factors were present in all diseases. The problem at the present time was to connect ætiologically a tumour of one species with a tumour of another species. Tumours, though exhibiting microscopical and biological unity, were nevertheless found, when examined by experimental means, to be apparently individual and separate. It was towards a solution of this mystery that he had been bending his energies during the last few years. A strong belief in the cellular hypothesis involved an almost fervent animosity towards the parasitic hypothesis. The evidence which had been served out against the latter was negative evidence, and dogmatic conclusions could not be drawn from negative evidence. With few exceptions, tumours could be propagated only by means of living cells. When the cells were killed, by heat or by mechanical disintegration, by freezing or by thawing, the dead product was no longer effective. Infection of the host cells did not usually occur, but an exception to that rule was found in the case of mouse tumours, in which the connective tissue stroma became involved.

Two points stood out clearly: (1) If the cause of cancer be found, it must fit firmly into existing established knowledge. (2) If the cause be a living thing, the infective process is something different from what we are already acquainted with. If the cause were a microbe it was not unreasonable to expect, by simple inoculation of a pure culture of the microbe, to cause a reproduction of the tumour in another species of animal. Tuberculous tissues taken from man, or dog or monkey, would, when inoculated into a guinea-pig, cause tuberculosis, and in that case isolation of an organism established the organism as the cause of the disease. In the case of cancer, however, the first part of the process—the inoculation of morbid material—was always attended by failure when another species of animal was used, and indeed in the same species when the cells were killed. Therefore, if there was an organism of cancer, it did not act in the simple way that the organism of tuberculosis did. The failure to find any evidence upon which a rational ætiological theory might be built had led, on the one hand, to the wildest speculations, particularly among those who had not acquainted themselves with the large amount of exact knowledge which experimentation had yielded. Among morbid anatomists there was a pessimistic scepticism which was not far removed from obscurantism.

### *The Rous Tumour.*

For three years he had been giving very considerable study to sarcoma of the fowl, which was first described by Peyton Rous, of the Rockefeller Institute. Rous described three tumours of which the one still surviving was a spindle-celled sarcoma, which could be transmitted by filtrates through fairly fine candles, or by dry material, or by cultures made by dropping a fragment of tumour into a medium and then incubating it for seven days, after which the fluid was infective. This tumour deserved very close study, and Dr. Gye proceeded to demonstrate, by means of the epidiascope, some of the important aspects of the work which he and his colleagues had been doing. The tumour was not always filterable; its filterability certainly was not constant. When working at this subject over a long period it was observed from time to time that filtrates prepared, apparently, in exactly the same way were, in one case, excessively infective, while at other times they were barely infective at all. Last summer a tumour with which he had worked for more than two years suddenly lost its filterability.[1] This variation in filterability seemed to dispose of the argument which had been advanced by pathologists all over the world—namely, that this tumour of the fowl was not a true tumour, because it was transmissible by filtrates. Again, if one took filtrates of the tumour, one observed another interesting fact—that the tumour produced by filtrates was proportional to the size of the inoculum. It was only fair to inject the same amount of fluid on each side so as to expose an equal number of cells in both breasts to an equal chance of infection. Therefore 1 c.cm. of the filtrate was inoculated into the right breast, and a mixture consisting of 0·5 c.cm. of the filtrate and 0·5 c.cm. of saline was inoculated into the left. In the left breast the resultant tumour was as 1 to 2 of that in the right breast, as measured by the rule. One could not weigh these tumours because of the invasion of muscle and other tissue, but the fact that the same proportions held in a large series of experiments was most significant. Most of the birds thus treated died before the twenty-eighth day.

In another series of birds filtrates from the tumours were treated with a small quantity of chloroform for two hours and then inoculated in a dose of 1 c.cm. in one breast, 0·5 c.cm. (with 0·5 c.cm. of non-active material) in the other. In a chart shown typical of this series the bird died only on the thirty-fourth day, and the tumours were of slower growth, but the same proportion between the two breasts held good. In another series a large quantity of chloroform was added, reducing the infectivity of the filtrate to nil. Chicken embryo was added, but that did not restore the potency of the inoculum. Murphy, in America, had recently reported that he had been able to restore the infectivity of the Rous filtrates which had been destroyed by chloroform, by the addition of chicken embryo, and by cultures of mouse placenta. Dr. Gye had tested chick embryos more than 150 times without being able to restore lost infectivity by this means.

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[1] See THE LANCET, May 22nd, 1926, p. 990.

With a severe chloroforming the infectivity was so far reduced that the tumour was formed only very slowly, the bird not dying until the fifty-second day, and with a tumour in only one breast, 0·5 c.cm. not having been infective at all. He had never believed that chloroform killed the *whole* of what he regarded as the virus in a filtrate, but this was really beside the point. The really important thing was that one could restore the infectivity which had been destroyed by the addition of chloroform by adding a culture from another tumour, though this did not apply to all tumours. Another important point was that one could reverse what was a regular rule—the proportion between tumour and dose—by adding a culture from another tumour to the inoculum of chloroformed material into one breast. It seemed quite clear that in the rat sarcoma was something which was common to it and to the Rous sarcoma, and that that which was common to both could be taken from tube to tube.

In conclusion, Dr. Gye said that when he published the preliminary notice of his work last July he naturally felt certain of his facts—otherwise he would not have published them—and he felt fairly confident that the interpretation he placed upon what he found would prove to be correct. Now, after still further work, and an investigation by other means, he felt still more confident.

### *Discussion.*

The President, in the name of the Section, thanked Dr. Gye for his masterly and logical résumé of his work. He referred to the possible connexion between his own researches when cutting whole sections of breasts and Dr. Gye's experimental work. The subject of Paget's disease was very instructive in this connexion. In some cases Paget's disease of the nipple was the only disease discoverable in the breast. He trusted that in the discussion the consideration of benign tumours would not be excluded. For instance, in fibro-adenomata of the breast there were different forms of growth, and they varied in kind because they affected different tissues. It seemed no argument against a process being infective because one form of irritation might affect different tissues in a different manner.

Mr. J. Jackson Clarke showed on the screen drawings of microscopical bodies found by him in various tumours which, he claimed, resembled those demonstrated by Dr. Gye and Mr. Barnard. He believed them to be of parasitic origin. He then showed drawings indicating the budding process in molluscum contagiosum.

Sir Almroth Wright, answering the President's invitation to speak, said he did not think anyone was in a position to make a contribution on the subject unless he had been himself doing work on the same lines. When speaking of a cause in medicine, it should always be remembered that many factors contributed to the result. No doubt Dr. Gye had found some of the factors in cancer, but not all of them yet. Bacon used to make a distinction between experiments of light and experiments of fruit. Dr. Gye had not yet made experiments of fruit—i.e., in the way of being useful. Experiments of light were now going forward in regard to cancer, and some of them might at present bring darkness. The suggestion that by injecting a filtrate into connective tissue a tumour of complex structure could be produced was strange to him. At present he could only wonder at the extraordinary skill of these experiments, which enabled one to go away and feel that much had been done which would throw light on the subject of cancer.

Sir Charles Ballance said that for many years he was associated with the late Prof. Shattock in a study of the intimate pathology of cancer, but all their results were negative. As many of the speaker's family had died from malignant disease, he determined, as a student, to study the intimate pathology of that disease, and his work in that way enabled him to appreciate highly Dr. Gye's work. It seemed likely that it was upon this work that all progress in knowledge on the nature of cancer would in future rest.

Dr. Wm. Cramer, speaking as one who had been engaged in the experimental study of cancer, said his feeling on learning of Dr. Gye's results was one of relief from a number of difficulties which had seemed to be insoluble, particularly those which were associated with sarcoma in the fowl. Some got over that difficulty by declaring this was not a malignant new growth because it could be propagated without the transplantation of living cells. The chief point about the fowl tumour was that it was more malignant than was the ordinary animal tumour. And Dr. Gye had convincingly demonstrated that two factors were concerned, not one, and one of the two factors could be substituted from other tumours. There had been much discussion as to whether the cause of cancer was a living virus, or whether it was a chemical substance, but that was of secondary importance in comparison with other aspects of Dr. Gye's work. When one was dealing with a practically invisible virus it was easy to say it might just as well be a chemical substance, but it was for those who held that view to explain how the virus was able to multiply itself in a test-tube. It was not easy to reject a view which one had held during the best part of one's life, and he had found it difficult to do so in the case of cancer, but careful pondering on the matter had made him a convinced follower of Dr. Gye.

Mr. Zachary Cope asked whether Dr. Gye had studied to any extent the relationship of benign to malignant tumours. Often it was difficult to know whether a tumour was benign or malignant unless a very careful microscopical section was taken, and he wondered whether Dr. Gye had had the opportunity of seeing if either of the factors concerned was ever present in such tumours as fibromyoma of the uterus or a large chondroma of the femur. Either of those tumours might grow rapidly and present characters which were not malignant, but which showed that there was a rapidly acting factor at work in the organism.

Dr. H. J. B. Fry said he had done one experiment recently which was of interest in the present connexion. Into the left breast of a fowl was injected 0·5 c.cm. of a subculture virus with 0·5 c.cm. of chloroformed extract, and into the right breast 1 c.cm. of chloroformed extract, high up, and into its lower half 1 c.cm. of virus. Curiously, in the left breast no tumour developed, while in the right breast no tumour formed at the site of either inoculation, but midway between them a typical localised growth appeared, and there was extensive metastasis in the lungs. He presumed there must have been material spreading from both foci, which intermingled and formed a tumour. The growth took two months to kill the fowl.

Dr. Helen Chambers asked whether Dr. Gye kept his original cultures still growing. She had herself been working with a Jensen sarcoma for 17 years, and it could still be propagated. In those 17 years only one case of spontaneous cancer in the rat had occurred, though the animals lived in close quarters, rendering communication of the disease readily possible.

Dr. Gye, in reply, said the direction of inquiry suggested by Mr. Cope was now being followed. There was no sharp line of demarcation between benign and malignant tumours. Most of the tumours of the lower animals were relatively benign, and only rarely did they form metastases. The only really malignant one was that described by Peyton Rous. In reply to Dr. Chambers he had not thought it necessary to keep the original cultures going; it was very difficult to keep them long free from contamination, and when they became contaminated their value disappeared.

# MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society was held on May 28th, Colonel L. W. HARRISON occupying the chair.

Mr. JOHNSTON ABRAHAM opened a discussion on

### *Marriage and Gonorrhœa.*

He began by reviewing the ideas about gonorrhœa entertained during the last 300 years. Many of these views, he said, had fallen into the limbo of forgotten things, but some of them were still held by laymen, and it was both instructive and humiliating to realise what conceptions were current even as late as the 'eighties. Leviticus XV. gave the views of Moses, the greatest medical officer of health of his time. Galen believed that the discharge in the male was caused by a flow of diseased semen from the vesicles and prostate, and did not seem to have recognised that the disease affected women at all. Galen's idea was firmly held in this country until the reign of George I. The first person to dispute it was a London surgeon, William Cockburn, who believed that the discharge was due to an ulcer inside the urethra, a view which prevailed until the time of John Hunter. Until that time it was considered that pus could not arise anywhere in the body unless there was an abscess or ulcer; this John Hunter disproved. In 1753 eight men were executed, two of whom were known to have gonorrhœa in severe form. The bodies of these two were procured, and a very careful examination of them failed to disclose any ulcer; the urethra merely appeared a little bluish, especially near the glans.

The heresy that syphilis and gonorrhœa were the same disease persisted for a long time. When the great epidemic of syphilis occurred at the end of the fifteenth century, the New Disease, syphilis, so overshadowed gonorrhœa that what was known about the latter was almost forgotten. Syphilis broke out at the Siege of Naples in 1494, and by the year 1500 it had reached Stockholm Paracelsus, in 1530, said that gonorrhœa was simply a preliminary symptom of syphilis, and in that, unfortunately, Ambroise Paré supported him, and even Sydenham accepted the statement as a proved fact. When it was found that many cases of gonorrhœa got well under local treatment without showing general symptoms, a compromise was suggested in the theory that there were two types of venereal disease, simple and malignant gonorrhœa. The view held when John Hunter came on the scene was that if the discharge were cured too quickly by the use of astringents, the purulent matter from the internal ulcer was driven inwards, and caused a constitutional taint. From 1767 to 1800 practically every case of gonorrhœa was treated with mercury, the patient being inoculated with mercury until he salivated; he was not regarded as being sufficiently under the influence of the drug until he was spitting three pints a day. If the surgeon on his morning visit found less than that, he gave orders that the mercury be pushed further, and it was a common practice for patients to add water to make up the quantity. This treatment persisted well into the nineteenth century. In 1878 James Lane, in his Harveian Lectures, said that though gonorrhœa was generally caused in the male by contagion from the female, yet it often developed when no disease could be discovered in the female partner, and he agreed with the view that it could occur merely from sexual imprudence and excess and from alcoholic indulgence. Even four years after the discovery of the gonococcus the disease was said to arise in the male from intercourse with women who had not got it themselves. There was a very great increase in gonorrhœa from 1850 to 1880. In those days endocervicitis was regarded as mere cervical catarrh. Even now that fallacies about the disease had been exploded, some old-fashioned practitioners still believed in the alum douche for women suffering from gonorrhœa.

Mr. Abraham then turned to the question, When could a person be considered so free from the disease that it was safe to enter into conjugal relations? *In the male, the morning urine when centrifuged* should be free of pus cells and organisms—he preferred to say organisms, rather than gonococci, as the presence of other organisms was sometimes as dangerous to the patient as that of gonococci. Some of these organisms, he believed, were now more pathogenic than formerly, perhaps because there was a lessened body resistance to them. He was not so keen on the importance of urethral shreds in the specimen. Mucorrhœa might be present, but this slowly declined as the infectivity passed away, and he believed that many patients were treated too long, merely because mucorrhœa persisted. Over-treatment and over-instrumentation sometimes damaged the urethra permanently. Another very useful test of cure was exercise. When the urethra had been clear for a fortnight the patient was allowed to take exercise. During the war it was found that mounted soldiers could not be cured of gonorrhœa while they continued to ride, and during treatment exercise must be reduced to the minimum. If after exercise the patient was still clear, he, the speaker, massaged the urethra on a straight sound and the posterior urethra on a flexible bougie, afterwards examining the secretion by smear and culture. If a man passed those tests he had a provocative vaccine given him. This was repeated in three months. He did not examine a patient with the urethroscope until he had remained clear for three months, as it was easy to abrade the mucous membrane. He definitely objected to injecting silver nitrate, and to give a man beer to see if it made him worse was only putting him back unnecessarily.

In the female a decision was more difficult; it was very hard to say when a woman was cured of gonorrhœa. Moreover, there was always the possibility of pregnancy occurring. At one time he used to think that a clear cervical secretion meant safety, but he did not think so now. There were only two infallible indications of a woman having gonorrhœa—namely, gonococcal inflammation of the male urethra or of a child's *conjunctiva. To be sure of a cure, all clinical* signs of the disease must have disappeared; there must be no induration of Bartholin's glands, and the urethra must be normal on inspection and palpation at vaginal and urethroscopic examination. Skene's ducts should show no sign of inflammation, nor should vagina and cervix. It was impossible to know clinically whether a woman was cured of the disease or not; bacteriological tests must be relied on and smears must be taken from every likely site. Both before and after injection of a provocative vaccine these smears should be negative. In the female the reaction from the provocative injection was not so severe as in the male. He had always found smears more reliable than cultures, though he knew it was otherwise with some workers. It was very difficult anyhow to find the gonococcus, and, therefore, every likely means should be employed.

Mr. Abraham discussed the complement-fixation test in some detail. He regarded it as a very valuable test. A persistently positive complement-fixation test indicated that the patient had a focus, probably quiescent. He quoted the case of an old gentleman who had gonorrhœa 15 years previously, was now suffering from gonorrhœal iritis, and gave a positive test. The focus might be in a joint, in the vesicle, in a closed tube, or in the epididymis. A positive complement-fixation test *did not justify forbidding* the patient to marry. A widow with tubes closed by gonorrhœa did not infect her husband when she married again, and every case must be judged on its merits. To be on the safe side, a negative complement-fixation test should be accompanied by absence of physical signs before permission to marry was given.

### *Discussion.*

Dr. O. F. PEDROSO (Brazil) said that gonorrhœa had been studied too much, perhaps, from the local point of view. There was a lowered resistance in these patients to urethritis, due to chemical attenuation of fluids of the body. In cases in which it was impossible to remove the discharge he had always noted a defect in the respiration. For its continued existence the *gonococcus required a certain pressure of carbon* dioxide, and it might well be that increased virulence of that microbe was due to increased pressure of $CO_2$ in the patient's blood. Probably exercise and the consumption of alcohol made patients worse because they produced an excess of carbon dioxide in the blood, giving in that way a better medium for the growth of the organism.

Dr. J. E Sharp said he could produce a brisk local reaction in patients by using almost any vaccine. He did not consider the presence in the discharge of organisms other than the gonococcus of so much importance as did Mr. Abraham; he had allowed such people to marry when gonococci were no longer present, and in the course of years there had not been any infection.

Dr. H. M. Hanschell said that he used to think that people who had a non-specific urethritis were safe, but latterly he had known of cases in which men had developed non-gonococcal urethritis from sexual union in the ordinary way. Such cases were very difficult to cure, especially when there was a slight discharge of pus cells and the urethroscope revealed a polypoid condition in the distal part of the urethra. He had tried various treatments, such as autogenous vaccines, touching up the excrescences with silver nitrate, and with the electric cautery, but without benefit. Ionising the urethra with zinc sulphate was the only means which brought even partial success.

Dr. W. J. Fenton agreed as to the great difficulty of curing secondary infections of the urethra, especially those due to streptococci.

Squadron Leader T. C. Morton asked if it was the experience of members that non-specific urethritis ever led to epididymitis. He had seen one case of *B. coli* urethritis. He refrained from treating it with alkalis, the condition spread to the kidney, and the man was acutely ill for a time.

Colonel E. G. Ffrench said that it was well known that a man could be more easily cured of gonorrhœa than could a woman. Sometimes when coitus was resumed the wife reinfected the man with the disease. The use of condoms for a long period was resented by most partners. A medico-legal point of some importance arose when a surgeon gave permission for a man to marry and then the latter infected his wife, for the question of divorce proceedings might arise.

Major E. C. Lambkin said that the gonococcus was the cause of much damage to other tissues. Many mild cases were left with a gleet, and in most cases the gonococcus was found eventually, as also in chronic cases of epididymitis and prostatitis. He did not like the injection into the urethra of such irritants as silver nitrate. At Woolwich for some time now a gonococcal endotoxin had been used. 960 gr. of sodium bicarbonate per diem had been of great help in clearing acute cases, but stimulation by giving $CO_2$ had been stopped as it facilitated the growth of the gonococcus.

The Chairman said that infection by *B. coli* depended largely on whether or not there was any breach of surface of the mucous membrane, also on whether the membrane had previously been attacked by the gonococcus. The latter contingency allowed the organisms to get a deep foothold. He agreed as to the difficulty of curing the so-called sago-body condition of the anterior urethra, and shared the dislike of other speakers of the use of silver nitrate on the urethra. Sometimes the only indication of gonococcal infection was a positive complement-fixation test.

Mr. Abraham replied.

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Royal West Sussex Hospital.—The annual report says that some of the wards will have to be closed unless there is a substantial increase in regular income. The Board is considering a scheme of weekly contributions. There has been a remarkable increase in the work of the hospital, although the population remains nearly constant. The year's deficit was £2758 and investments are to be sold to liquidate the amount. There are 100 beds.

# Reports and Analytical Records.

## (1) EXTRACT OF COD-LIVER OIL; (2) PHOSPHO-LECITHIN.

(Henry K. Wampole and Co., Perth, Ontario, Canada; Agents: Francis Newbery and Sons, Ltd., 31–33, Banner-street, London, E.C. 1.)

The first of these products is an extract of fresh cod livers, the oily and fatty portions being eliminated. This is combined with fluid extract of wild cherry bark and compound syrup of hypophosphites. The combination is a nutritive tonic and stimulant which has been in use for over 40 years. The preparation is put up in 6-oz. and 15-oz. bottles, the dose for adults being one tablespoonful, for children from 5 to 12 years one teaspoonful, and from 1 to 5 years one-half teaspoonful, mixed in all cases with plenty of water. The preparation contains strychnine in the proportion of 1/80 gr. to each tablespoonful.

Phospho-lecithin (Wampole), which is recommended in depressed conditions of the nervous system, is stated by the manufacturers to contain in each fluid ounce sodium glycerophosphate 8 gr., calcium glycerophosphate 4 gr., potassium glycerophosphate 4 gr., strychnine glycerophosphate 1/60 gr., lecithin 1/16 gr., avenin 1/30 gr., and alcohol 14 per cent. It has also been before the medical profession for many years. As a restorative after injury or disease and during convalescence it should prove a valuable adjuvant to treatment. It is put up in 8-oz. and 16-oz. bottles. The dose for adults is a dessertspoonful four times a day, preferably before each meal and before retiring, and for children from one-half to one teaspoonful according to age. It will be noted that there is 1/240 gr. of strychnine in each dessertspoonful of the mixture.

## THYROXIN TABLETS.

(British Drug Houses, Ltd., 16–30, Graham-street, City-road, London, N. 1.)

Thyroxin is an iodine derivative of tryptophane, containing about 65 per cent. of iodine, and is regarded as the active principle of the thyroid. Only a very small proportion of thyroxin is contained in the glandular substance—it has been stated that 4 cwt. of the substance is required to produce 1 g. of thyroxin —and the process of extraction is complicated. Hence pure thyroxin has only been available at very high prices. The British Drug Houses, Ltd., are now offering the sodium salt of pure thyroxin, in the form of tablets, at a price which they believe will place the product within the reach of the medical practitioner who prefers to use a thyroid preparation susceptible of exact standardisation. B.D.H. thyroxin tablets are put up in bottles of 100, each containing 0·2, 0·8, or 2·0 mg. of the pure salt.

## ENERGEN CASEIN BREAD.

(Therapeutic Foods Co., Energen Works, Willesden, N.W.)

The box examined contained 12 rolls each weighing 1·14 oz. On analysis the following results were obtained:—

| | | |
|---|---|---|
| Altered starch (carbohydrate) | 41·29 | per cent. |
| Proteins | 43·75 | ,, |
| Moisture | 8·41 | ,, |
| Ash | 0·04 | ,, |
| Fat | 2·48 | ,, |
| Crude fibre | 0·10 | ,, |

"Energen" does not claim to be starch-free, but it is much lower in carbohydrates and proportionately higher in proteins than ordinary bread. We examined "Energen" two years ago, and, whilst the carbohydrates are now a little lower, the protein is 7¼ per cent. higher. The composition of this bread will be appreciated by physicians who are concerned with devising suitable dietaries for diabetic patients.

# Reviews and Notices of Books.

### THE NEMATODE PARASITES OF VERTEBRATES.

By WARRINGTON YORKE, M.D., and P. A. MAPLESTONE, M.D. London: J. and A. Churchill. 1926. With 307 illustrations. Pp. 536. 36*s*.

TO-DAY the science of helminthology has a recognised place among the ancillary sciences of medicine. Many important diseases of man, particularly those of tropical countries, are due to worm parasites, and the medical officer is expected to have as clear a knowledge of their mode of spread and prevention as of their treatment. The parasites of man do not, however, form a concise group, but are members of genera which are found represented often by numerous species in other animals; in some cases the forms which parasitise man are normally found infesting one or other of the domesticated animals. A knowledge of the helminth parasites of vertebrates in general must, therefore, be of value in advancing that of the particular forms which occur in man.

The volume compiled by Prof. Yorke and Dr. Maplestone sets out in a clear, succinct, and well-illustrated manner present-day conceptions of the classification of nematodes. It also provides for those who are acquainted with the terminology of nematode morphology and the structures which these terms signify, and care to rely upon the somewhat treacherous method of keys, a rapid means of placing many of the forms found parasitic in the vertebrates in their proper genera. The novice will probably find the volume beyond his capacity, especially if he is out of reach of supervision and of libraries where he can consult the literature. To the medical man interested more especially in the life-history and geographical distribution of nematodes the work will prove disappointing, for neither of these subjects is dealt with. He will be puzzled, and it is salutary that this is so, to find the insignificant place taken by the forms found in man. He will probably conclude that, after all, he is more likely to succeed in arriving at a diagnosis through the somewhat empirical method of the host list than by attempting to sort out his material with the aid of a formal classification such as that followed in this volume, which ignores knowledge of the host, yet occasionally has to fall back on a knowledge of the particular organ in which the parasite lived. However this may be, the work will be examined with interest by many workers in preventive medicine as well as by a large circle of professional zoologists. To the experts among the latter the book will doubtless prove an invaluable work of reference.

A suggestive foreword is written by Prof C. W. Stiles, of the United States Public Health Service, to whose Index Catalogue of Nematodes the authors pay special tribute as a volume without which, they admit, their own work would have been an impossible undertaking.

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### COMMON SENSE AND ITS CULTIVATION.

By Dr. HANBURY HANKIN, M.A., late Fellow of St. John's College, Cambridge. With a Foreword by Dr. C. S. MYERS, F.R.S., Director of the National Institute of Industrial Psychology London: Kegan Paul. 1926. Pp. 289. 7*s*. 6*d*.

THIS book is a defence of intuition, an intuition based upon data which have been acquired and forgotten and are yet available to the mind without being recalled to consciousness. This intuition is often hampered by the trammels of reason, and even to seek for those reasons may be unwise. The author cites examples of such unwisdom, but provides the best example himself when he proposes on page 8 to consider a large number of proofs of the existence of subconscious data. Writings on the theory of the unconscious—with which he has at some time been familiar, as shown on page 3—provide evidence of forgotten material by describing how it has been brought into consciousness, but such *proofs* are *not* offered here; instances are given instead which might sometimes be explained by the hypothesis of subconscious knowledge, but in some of which the existence of this knowledge is specifically denied, as in the case of the successful man who "was always ready to turn to a thing about which he knew practically nothing provided his business instinct told him there was a chance of coining money." If the curious reader asked for a definition of business "instinct" the author might, quite consistently, reply that both the definition and the instinct are matters of common sense.

The author's main thesis is that the educational development of interest and conscious reasoning is destructive to the formation of intuitive judgment. A great part of the argument is derived from the success of business men without this training; the trained expert does the drudgery whilst the intuitional business man makes the money. A classical education has the advantage that, being trivial and uninteresting—this is the author's estimate of it apparently—it provides practice in forgetting, and scientific training is to be condemned since it involves constant reasoning and is often highly interesting. A notable suggestion is that the worldly success of Quakers is not due to their industry or honesty but arises from the incompatibility of their tenets with profane reason; this, being to them a matter of daily experience, led them to follow intuition in business as well as in the religious life.

The author's views, often appearing paradoxical, concern mental processes which academic psychologists have explored from another side. Psychology is accused of dethroning reason, and now Dr. Hankin takes a hand in the overthrow. The late Prof. Varendonck studied his own unconscious processes, and Dr. Hankin makes points of contact with him, and many sound critics agree with the thesis that we destroy some natural abilities by our educational methods. But the mental drive to effort in certain directions is not recognised here; Jung's work on temperamental types, which includes a study of the successful business man and the humble expert, suggests that something other than education decides the choice of aims and methods. Provocative and open to much criticism, the book is to be recommended to the deriders and worshippers of common sense as well as to those who study it.

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### DISEASES AND HYGIENE OF WARM CLIMATES.

*Krankheiten und Hygiene der warmen Länder.* By Profs. Dr. REINHOLD RUGE, Dr. PETER MÜHLENS, and Dr. MAX ZUR VERTH. Leipzig: Dr. Werner Klinkhardt. 1925. *Pp.* 401. *M.*30.

THE revised second edition of this text-book forms a useful contribution to the literature on tropical diseases. The authors have attained their object, which was to compile a handbook which will be useful to practitioners in the tropics; It will also be a valuable addition to the library of the student. In fact, the volume supplies readers with a lucid, compact, and comprehensive description of diseases, their methods of transmission, and treatment. In order not to overburden the text, a generous use of illustrations has been employed with great advantage. The figures, photographs, and plates are, in most instances, well chosen and beautifully reproduced on good paper. The charts of Prof. Fulleborn, illustrating the various life-histories, are welcome because they present to students of parasitology and hygiene a graphic picture of the transmission of the more important and common diseases of man in the tropics.

In the opening section on hygiene the subject most adequately dealt with is housing, and this is followed by a short, clear, and well-illustrated account of the study of blood. Malaria naturally receives a detailed description. The parasites, the insect vectors, and the clinical aspects are fully figured with the aid of maps, charts, drawings, and photographs. In this section, which on the whole is very well done, we would point out a mistake which ought to have been corrected. The parasite of subtertian malaria is here named *Plasmodium immaculatum*, whereas *Plasmodium falciparum* is its correct name; moreover, it would be well to give a complete list of synonyms when discussing the *Plasmodia*, otherwise students are apt to become confused. Sleeping sickness, oriental sore, and kala-azar are described, and a good account of dysentery follows. The chief flagellates and ciliates of the human intestine are shortly dealt with. It seems an oversight not to illustrate *Isospora belli* (syn. *Isospora hominis*), which is certainly the commonest coccidian parasite of man and possibly the only one of pathogenic importance. The chapters on spirochætal diseases—namely, yaws, noma, acute infective jaundice, and yellow fever—are carefully presented, and the beautiful selection of photographs depicting the clinical features of yaws deserves special praise.

Of helminthic infections the authors have considered those which, in certain areas, are widely spread, and thus of great importance in the public health of communities in hot countries—e.g., ankylostomiasis, bilharziasis, and filariasis. Fig. 321 on page 326 is misleading in that three shells, a knowledge of which is important in the investigation of bilharziasis, are not drawn to scale, and their relative sizes are incorrect. This is an important matter in their identification. Sprue, beri-beri, and pellagra receive attention, and Malta fever, plague, and leprosy are carefully described; a short account of the various vegetable and animal poisons concludes the volume.

While more detailed attention might have been given to some of the subjects dealt with, on the whole the authors have shown judgment in emphasising those diseases which are of most importance in the tropics from the public health point of view. The work is likely to be of great value to the student of tropical diseases.

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## SURGERY.

*Die Chirurgie.* A Comprehensive Presentation of General and Special Surgery. Vol. I., Section VII. Editors: Prof. KONIGSBERG and Prof. NORDMANN. Berlin and Vienna: Urban and Schwarzenberg. 1926. Pp. 936. M.17.

THIS book forms a small section of the first volume of a new systematic surgery, of which only a few numbers have so far appeared. It is characterised by the extraordinary thoroughness and elaboration of detail which is distinctive of the German mind. But though it would be a laborious book to read, this very elaboration makes it exceedingly convenient as a work of reference. The first 140 pages are devoted entirely to the subject of sutures and methods of stitching. Exact details are given for the preparation of various sutures, and especially those of catgut and of silk. For the former the iodine method is most favoured, and many of the details given will be found of great practical value. Various methods of tying knots are described in great elaboration with very neat thumb-nail illustrations which should appeal to the surgeon with a flair for technique. The remainder of the article describes in detail every possible method of suturing every known kind of tissue, even bones and blood-vessels, and one or two exceedingly neat devices are illustrated.

The second half of the book deals with the general pathology of septic and special infections. The various paths of infection and the reactions of the body, both local and general, are described, and the latest views on immunity, prophylaxis, and sero-therapy discussed. Bacteriology is considered from a surgical standpoint, those points being stressed which are of practical importance, whilst the simpler laboratory methods are clearly described. Much attention is paid to infective gangrene, and there are several good coloured illustrations of gas gangrene. In the special section, tetanus, diphtheria, anthrax, and other special infections are described, and the article concludes with an account of the pathology of tubercle and syphilis. The author has condensed into a short space a large amount of information, but the arrangement is so well ordered and the descriptions so clear that reference is easy, and the reader can rapidly obtain such precise information in advanced pathology as is not available in ordinary surgical works. The illustrations are excellent throughout.

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*Manual of Surgery.* By the late ALEXIS THOMSON, M.D., F.R.C.S., and ALEXANDER MILES, M.D., LL.D., F.R.C.S. Vol. I. Seventh edition. London: Humphrey Milford, Oxford University Press. 1926. Pp. 565.

THIS volume is the first of two forming the seventh edition of this well-known text-book. The great success with which the book has met is sufficient guarantee of its value, but we cannot refrain from congratulating Mr. Miles on the results of the last revision. Whilst retaining all its old familiar characteristics, the book has been brought well up to date, and a surgeon must be hard to please who would ask that more information should be condensed into its 550 pages. The articles present clearly all the elementary facts of the conditions with which they deal, while the advanced student preparing for the higher examinations might well use this volume as the foundation of his studies. Indeed, if he has mastered all that it contains he need fear no examination or examiner. The articles on infective processes and on bones are especially good and will be read with pleasure and with profit by many an experienced surgeon.

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*Thérapeutique Chirurgicale.* By P. LECÈNE, Professor in the Faculty of Medicine, Paris, and R. LERICHE, Professor in the Faculty of Medicine, Strasbourg. Vol. III. Paris: Masson et Cie. 1926. Pp. 645. Fr.60.

THIS three-volume text-book of surgical therapeutics has some unusual features. For instance, the details of operations are not described, since the authors believe that this should be the function of text-books of operative surgery. Assuming a knowledge of pathology, symptomatology, and diagnosis, they deal with therapeutic principles, and having formulated these principles, they give the indications for surgery. They describe how the indications can be met by operative means and finally give results of such procedures. The third volume deals with the abdomen and genito-urinary tract, male and female. There are no pictures. The authors regard a therapeutic decision as an intellectual act and disapprove of such short cuts as are suggested to the mind of the reader by illustrations. The recommendations offered in the text seem to be based upon experience and often include a personal touch. The book as a whole is attractive, easy, and interesting to read, and is a good guide to modern surgical therapeutics.

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## X RAYS AND RADIUM.

*An Introduction to the Study of X Rays and Radium.* By HECTOR A. COLWELL and CECIL P. G. WAKELEY. London: Oxford Medical Publications. 1926. Pp. 220. 10*s.* 6*d.*

THIS book purports to give a lucid account of the basic physical principles of radio-diagnosis and radiotherapy and succeeds well in this aim. The ever-widening circles of our knowledge of radiology and physics have overlapped, and it is to this area of overlap that the authors have confined themselves without trespassing into the realm of either pure physics or pure radiology. The subject-matter has been carefully arranged and the explanations of the various physical phenomena and theories are clear and easy to follow.

The first part of the book deals chiefly with X rays and the second part with radium. An account of the broad principles of radio-technique is given, and the physical reasons for the procedures are explained. A useful and interesting chapter is included on the atomic theory; it gives a clear and simple account of the present state of our knowledge and is not too technical. References to suitable literature are given throughout the book for those readers who wish to pursue the subject more deeply than it has been the purpose of the authors to go. The volume concludes with a copy of the Protection Committee's report and several useful appendices. It should prove of considerable value to students taking their radiological diploma and to others who wish to gain a knowledge of the general principles of X ray and radium work, and will prove invaluable to general practitioners and others who require a solid grounding in radiological principles and who have not the time to extract their knowledge from the standard text-books.

The book is well published and can be thoroughly recommended.

### Testicular Grafts.

*Étude sur la Vieillesse et le Rajeunissement par la Greffe.* By Dr. Serge Voronoff. Paris: Gaston Doin. 1926. Pp. 213. Fr.15.

Dr. Serge Voronoff is a prolific writer on the subject of testicular grafts. This book contains much that has been previously published in his other works on the subject, but he has here confined his attention to the action of grafts in old age. The preliminary chapters deal with the pathology of senescence and with the question as to whether it is possible by any process to lengthen the span of life of the tissue cells of the body. He then attacks the relationship between the testicles and old age, and summarises the results of various forms of grafting. The book concludes with a description of the author's own results, both in animals and in human beings. Dr. Voronoff's works have been reviewed more than once in this journal, and it is perhaps unnecessary to restate the criticisms and the comments that have been noted in previous reviews. The subject is one of universal interest, whether or not the reader is convinced by Dr. Voronoff's enthusiasm. The work is well supplied with plates showing the results of grafts on various old animals and old men.

### Plague Pamphlets of Thomas Dekker.

Edited by F. P. Wilson. Oxford: The Clarendon Press. 1925. Pp. 268. *9s.*

Thomas Dekker, besides being an admirable dramatist, was also what would now be called an enterprising journalist. National disasters such as an epidemic of plague have always been sources of good "copy," and Dekker's Plague Pamphlets are notable examples of this source of literature. They give a lively picture of social life during the seventeenth century; they afford opportunities of lauding the monarchy even when it is represented by two such very different monarchs as the great Queen Elizabeth and her more questionable successor; they are full of grim tales of tragedies and comedies of a macabre flavour, and occasionally they rise to heights of almost Biblical fervour in their exhortations to repentance and to a cleanly life, and in rhapsodies upon the gains by death in leaving the miseries of this present world and upon the joys of Heaven. Mr. Wilson's notes are models of what notes should be, and will be found most helpful, for Dekker is an author whose writings are difficult for modern readers. Six plague pamphlets are given—namely, The Wonderful Yeare; Newes from Graves-end; The Meeting of Gallants; A Rod for Run-awayes; London Looke Backe; The Blacke Rod and the White Rod. The Wonderful Yeare was the year 1602–3. It must be remembered that the historical year began on Jan. 1st, but the civil and legal year on March 25th, so that Queen Elizabeth, who died on March 24th, died, according to civil and legal reckoning, in 1602, but according to historical reckoning in 1603. The Wonderful Yeare was written, as is shown by internal evidence, when the plague was declining—i.e., in the late autumn of 1603. It would be interesting to know how many people read these pamphlets, for some of them at any rate, notably a Rod for Run-awayes, are anything but conducive to that peace of mind which is always to be sought for in epidemics. But the exhortations to those who would fly, not to do so, are admirable. In London, Looke Backe (p. 188) is some excellent advice on the duty of consulting a physician and not a quack, and the peroration of The Blacke Rod and the White Rod is a magnificent bit of English worthy to rank with *Manchester al Mondo* or the well-known meditation upon death in Chapter LXI. of "Vanity Fair."

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## JOURNALS.

Quarterly Journal of Medicine.—The April number contains the following articles: Pathological Variations in the Serum Calcium, by G. H. Percival and C. P. Stewart. The blood-serum calcium was estimated both in normal individuals and in those suffering from various complaints such as rheumatoid arthritis, diabetes mellitus, nephritis, epilepsy, tetania parathyreopriva, and various skin lesions. The effect of administering parathyroid extract and calcium salts on the serum-calcium content was also determined, and the results obtained are given.—The Purgative Action of Magnesium Salts, by Henry Cohen. Using an accurate method for the estimation of magnesium in small quantities of serum, the author shows that the purgative action of magnesium salts is exerted independently of the absorption of magnesium into the blood.—On the Hydrogen-ion Concentration and Some Other Properties of the Blood from Two Cases of Auto-toxic Enterogenous Cyanosis, by J. Barcroft, H. Dryerre, J. C. Meakins, T. R. Parsons, and W. Parsons. Observations on the blood in cases of auto-toxic enterogenous cyanosis have been previously chiefly concerned with the detection of abnormal varieties of hæmoglobin or the presence of micro-organisms. In this paper an account is given of two cases of the disease and of the investigations carried out on the blood in respect to its oxygen saturation, oxyhæmoglobin curve, carbon dioxide combining power and hydrogen-ion concentration. The oxygen saturation was found to be below normal in both cases.—The Functional Pathology of Nephritis, by E. B. Mayrs. The recent work on the physiology of the kidney and the pathology of the two main types of nephritis is discussed. In hydræmic nephritis loss of protein probably occurs through damaged glomeruli, and the tubule cells, although slightly impaired, give a normal response to the urea-excretion test for renal function. In azotæmic nephritis many of the glomeruli retain their permeability, whereas the tubular concentration function is considerably modified. Experimental evidence supporting these views is given in the article.—The Inheritance of Epilepsy, by W. Russell Brain. The opinions held from time to time as to the inheritance of epilepsy are reviewed, and fresh observations are added, based on an investigation of a series of over 200 epileptics. A family history of epilepsy was found in 28 per cent., as compared with about 10 per cent. in a control series. It was further noted that epilepsy begins more frequently in the first decade of life in those cases in which there is a family history of the disease. Early convulsions are also more likely to occur in epileptics and are more common in those who also have a family history of epilepsy. It is concluded that a predisposition is an ætiological factor in the disease.—The Spasm of Tetany Considered as a Disturbance of the Physiology of Muscle, by J. P. Martin. In accordance with recent work on the physiology of muscular contraction the author proceeds to an exposition of his thesis that the spasm of tetany is intrinsically myogenic in origin. Alkalosis, a lowering of the blood calcium or a deficiency of glycogen are factors which lead to an increase in the breakdown of lactacidogen, the precursor in the muscles of lactic and phosphoric acids, which are believed to cause muscular contraction. In tetany deficiency of calcium or a lowering of the hydrogen-ion concentration is usually present. The actual distribution of the spasm may depend upon differences in the properties of the muscles themselves and of their circulation and temperature.—Early Accounts of Acholuric Jaundice and the Subsequent History of Wilson's Patients, by J. M. H. Campbell. Claude Wilson, in 1890, described acholuric jaundice occurring in six members of a family; one of these survives, a grandson of the original patient, and has been examined by the author of this paper. He was found to exhibit the classical signs of the disease. An account is also given of some of the other early examples of the acquired and familial types of acholuric jaundice, and of the original work whereby the increased fragility of the red cells was demonstrated, and the beneficial effects of splenectomy.—Heredity in Acholuric Jaundice, by J. M. H. Campbell and E. C. Warner. Acholuric jaundice is transmitted as a dominant Mendelian character, and abnormal fragility of red cells may occur in a member of an affected family without other signs or symptoms of the disease.—A Further Contribution to the Study of Congenital Porphyrinuria (Hæmatoporphyria Congenita), by Leonard Mackey and Archibald E. Garrod. The authors described a case of this nature a few years ago in this journal.[1] The boy is now 9½ years old and some further developments have occurred. He is still prone to develop hydroa vacciniforme on exposed areas of the skin, and the spleen and liver are considerably enlarged. Examination of the urine and fæces showed the presence of uroporphyrin and coproporphyrin. There was also increased activity of the bone-marrow, as judged by blood examinations. The transilluminated appearances of the fingers are shown on a coloured plate, the bones being darker than normal. The methods of detecting pigmentation of the teeth, and its causation in certain cases, is also discussed, and the article concludes with some suggestions as to treatment.—Hæmatoporphyria Congenita (Congenital Porphyrinuria): Its Association with Hydroa Vacciniforme and Pigmentation of the Teeth, by Hugh T. Ashby. The patient, who is now nearly 4 years old, was first seen at the age of 12 months. The urine has been port-wine coloured from birth, the teeth are pink, the bones of the fingers show increased coloration by transillumination, and there are some immature red cells in the blood. The liver and spleen are not enlarged, the fundi are normal, and there is no pigmentation of the eyes. On exposure to the sun hydroa vacciniforme develops; this was first noticed at the age of 4 months. A vanishing quinine cream has been used to protect the skin from ultra-violet rays, which proved helpful last summer.—Hæmatoporphyria Congenita with Hydroa Vacciniforme and Hirsuties, by A. M. H. Gray. The subject of this paper is now aged 18, but her urine was not noticed to be red until the age of 5 years, when blisters appeared on the face and hands in the summer and have recurred annually. There is a growth of long downy hair on the forehead, cheeks, upper lip, chin, sides of neck, and chest. The teeth are of a deep yellowish-brown tint, but there is no trace of pink in them on fluorescing. The liver and spleen are not enlarged, but the finger bones are dark on trans-illumination. Porphyrin is present in the blood and fæces, and blood counts, while showing no anæmia, indicate that there is marked activity of the bone-marrow. The article is illustrated by a plate showing the appearance of the patient, and a discussion is included of the causation of the hydroa and of the relation of hirsuties to the disease.—The Dextrose Tolerance Curve in Health, by R. Hale-White and W. W. Payne. Capillary blood was used in this series of observations on sugar tolerance in healthy males of varying ages. It was found that in young adults the blood-sugar after taking 50 g. of glucose by the mouth may rise to 0·2 per cent., and with advancing years this figure may reach 0·24 per cent. In youth the blood-sugar returns to normal in two hours, but after the age of 60 three hours may elapse before the normal level is resumed. A delay in stomach emptying was found to impede considerably the rate of return of the blood-sugar to normal.—The journal concludes with an account of the meeting of the *Association of Physicians of Great Britain and Ireland* held in London in May, 1925.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. C. H. Dawe to the *Victory*, for R.N. Barracks, Portsmouth, and for duty with Surg. Rear-Admiral, R.N. Hospl., Haslar, as Naval Health Officer; Surg. Comdr. W. C. Carson to the *Valiant;* Surg. Comdr. H. R. H. Denny to the *Thunderer;* Surg. Comdr. F. Cock to the *Sandhurst;* Surg. Comdr. W. L. Hawkins to the *Douglas*, to be accommodated in R.N. Barracks, Devonport; and Surg. Comdr. M. W. Haydon to the *Tiger.* Surg. Lt.-Comdr. A. C. V. Green to the *Danae.*

### ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. F. L. Cassidi to be Surg. Lt.-Comdr.

## ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. W. Holden retires on retd. pay, and is granted the rank of Col.

Maj. and Bt. Lt.-Col. C. G. Browne retires on retd. pay and is granted the rank of Lt.-Col.

Temp. Capt. S. Pinion relinquishes his commn. and retains the rank of Capt.

### SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. W. G. Burns to be Capt.

### MILITIA.

Capts. D. M. Marr, F. H. B. Norrie, and P. Walsh to be Majs.

### TERRITORIAL ARMY.

Maj. H. Henry, having attained the age limit, is retired *and retains his rank with permission to wear the prescribed uniform.*

Maj. (Prov.) H. Pinto-Leite is confirmed in his rank.

Capt. B. C. O. Sheridan to be Divisional Adjutant, 42nd (East Lancs.) Div. T.A.

G. Williams to be Lt.

Sanitary Companies: Capt. J. A. Bingham to command the 5th (Scottish) Sanitary Company.

### TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. H. W. Read, from the Active List, to be Maj.

## ROYAL AIR FORCE.

*The undermentioned Flying Officers are promoted to* the rank of Flight Lt.: A. Dickson and R. T. F. Grace.

Flying Officer H. M. Levy resigns his short service commission.

## INDIAN MEDICAL SERVICES.

Maj. B. C. Clifford has been appointed Medical Officer of the Kashmir Survey Expedition. Lt.-Col. C. E. Palmer, Superintendent, Central Prison, Allahabad, officiates as Inspector-General of Prisons, United Provinces, vice Lt.-Col. J. E. Clements who has been granted leave. Lt.-Col. W. A. Means takes over duties of Assistant Director of Public Health (Malariology) United Provinces. Maj. J. A. S. Phillips officiates as Director of Public Health, Bihar and Orissa. Dr. Upendranath Ray Choudhury, Teacher of Surgery, Campbell Medical School, Calcutta, has been appointed a member of Bengal State Medical Faculty for two years. Maj. H. W. Action, Professor of Tropical Pathology and Bacteriology, officiates as Director, School of Tropical Medicine and Hygiene, Calcutta, vice Lt.-Col. Megaw, on leave. Dr. Tarak Nath Sur acts as Professor of Pathology of the Calcutta Medical College. Dr. R. B. Khambata acts as Director of Public Health, Bengal, vice Lt.-Col. A. D. Stewart. Dr. B. B. Brahmachari acts as Director of Bengal Public Health Laboratory. Dr. Abdul Basir Sahib Bahadur acts as Assistant Professor of Physiology, Madras Medical College. Dr. F. G. Martin has been posted to King Institute of Preventive Medicine, Guindy. Dr. M. L. Kamath, civil surgeon, Vizagapatam, acts as Presidency Surgeon and Second Physician, General Hospital, Madras, vice Maj. J. M. Skinner. Maj.-General T. H. Symons, Director-General, Indian Medical Service, has succeeded Sir Charles McWatt as a member of the Council of State. Dr. S. C. Mukerjee, civil surgeon, has been appointed to medical and executive charge of Betul Jail.

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[1] Quart. Jour. Med., 1921–22, xv., 310.

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ssues put the lower animals into a better position or individual resistance than plants have ever reached, out the selection of resistant individuals and the production of resistant races still remained their great defence as they do now among bacteria. With increasing size and complexity, longer life and restricted profusion of multiplication, the need for individual protection and cure became more pronounced, and out of the elementary capacity, which has been detected in amphibia and perhaps even in insects, birds and mammals developed the antibody response to proteins from other species round which so much recent progress has centred that its special and restricted occurrence is apt to be overlooked.

The Linacre Lecture makes it perfectly clear that we cannot hope to get at the bottom of what disease means without a comparative pathology which is more real and comprehensive than veterinary medicine. The structure of the body is meaningless if evolution has not happened, and it is comparative anatomy which has enabled us to understand what we do of it. Prof. G. ELLIOT SMITH has already contributed much to this understanding and returns to it again in the Cavendish Lecture, of which an abstract is given on p. 1081. Pathology and physiology still wait for the corresponding stimulus and illumination.

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## LOCAL HEALTH ADMINISTRATION: THE REVISION OF AREAS.

DUE weight will doubtless be given to the Memorandum of Evidence drawn up for submission to the Royal Commission on Local Government on behalf of the British Medical Association.[1] The Memorandum rightly urges the need of unification in the local administration of health matters. Unity of central administration was largely, if not completely, secured by the creation of the Ministry of Health and by the transfer of scattered departmental powers thereto. The next step is to apply the same process to local health powers and responsibilities. Remarkable evidence can be given as to the number of medical officers and health and welfare inspectors and nurses paid out of public funds concerned with a single family, the number of medical practitioners from whom various members of a single family may be simultaneously receiving treatment and advice, and the number of medical practitioners under whose care a single individual may come at different ages and in different circumstances. The British Medical Association states clearly its opinion that the necessary unification of local health administration cannot be attained without a radical revision of the local areas for the purpose. "The *ideal arrangement*," says the Memorandum, "would be to ignore existing county and borough or district areas altogether and to form entirely fresh areas throughout the country, each with a considerable town as a centre, associated with which should be such surrounding urban or rural areas as would most naturally or conveniently look to such town for its main hospital provision or as a focus of health administration. Within each such area there would be either one health administrative body established ad hoc, or one local government authority which, amongst its other functions, would have the responsibility for all forms of health administration."

It is, of course, the traditional English method of political development to view ideal arrangements in the light of existing institutions. Pursuing this national method we shall all presumably agree that the county will usually be too big an area for the purpose, while the small rural district with a low population and a low rateable value will not be big enough. A large extension of the county borough system would go a long way to solve the problem. More county boroughs are wanted, and the county borough must control a wider radius. The big town with a large rural perimeter has many advantages in such matters as town-planning, housing, and the supervision of milk-supply. When the application of the county borough system has punched large discs out of the map of the English counties, unsymmetrical and inconveniently-shaped areas will remain to puzzle the health administrator. Local politicians, too, will not wish to be disturbed, and they often exercise remarkable influence upon public affairs. But public opinion may be moving more readily than we imagine in the direction of the British Medical Association's plan. It is being recognised that modern curative medicine is largely institutional, and the best and most economical treatment is usually to be had in special institutions organised in relation to some large and perhaps distant town. But even the old distances of town and country are altering. Every year more of the countryside is brought within the radius of the large towns by means of improved services of motor transport. In other matters than health the old areas are being rearranged. Special educational facilities are causing a regrouping of local connexions. In the ecclesiastical world the creation of new bishoprics is adapting ancient episcopal arrangements to modern needs. In the judicial world it is realised that the immemorial system of assize towns is out of touch with present concentrations of population. In the domain of local government many changes are impending. The overseers are disappearing; poor relief is soon to depart from the lines laid down in the reign of Elizabeth; there is a movement towards standardisation; smaller units and areas are being merged in something larger and less parochial.

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[1] *Supplement to the British Medical Journal*, May 1st, 1926, pp. 173–4.

The idea of the big town as the centre of a large administrative area for health purposes is not entirely novel. There was much clear thinking in the Dawson Report in 1920, the document which the Consultative Council on Medical and Allied Services (then newly established under the Ministry of Health Act) presented to Dr. ADDISON as the first-fruits of its labours.[1] The Dawson Report contemplated the organisation of health administration in England by means of groupings of "primary" and "secondary" health centres. The primary centres were to be the smaller towns wherein the health services and activities of their own districts would be gathered together under the supervision of staffs consisting of general practitioners. The secondary centres were to be the larger towns big enough to contain adequate equipment and an efficient staff of consultants and specialists. Preventive and curative medicine were to be brought together in each case. Certain supplementary services were to be correlated—tuberculosis sanatoriums, convalescent centres, institutions for the feeble-minded, mental hospitals, infectious diseases hospitals, epileptic colonies, and so on. Teaching and research were not to be forgotten, and the universities were to play their proper part. Like other programmes of post-war reconstruction the Dawson Report was forgotten in the subsequent period of retrenchment and reaction. It might well be studied afresh.

# PREVENTION OF SKIN DISEASE IN CHILDHOOD.

IN the vast field of child hygiene there is no corner in which the fruits of prophylaxis could be more rapidly garnered than in the domain of skin diseases, while in spite of intensive propaganda and legislation it is usually a matter of years before the improvements in housing, light, and ventilation in a tuberculous community are mirrored in the returns of the Registrar-General. It has to be granted that morbidity—for skin diseases are rarely fatal—is of less apparent importance than mortality, but the loss of time in education, to consider only one aspect, is very great. A visit to the skin clinic of any general hospital reveals the fact that at least half the cases are among children, mostly under 5 years of age, and that a majority of these are the result of direct contagion by parasites or streptococci. The proportion is probably even greater, for it must not be forgotten that most of the patients have been through the sieve of the casualty department before they reach the dermatologist, and that the milder cases are not referred. It is not difficult to give good reasons for the preponderance, for the younger the child the less its degree of acquired immunity, the more uncontrolled the "scratch reflex," and the more vulnerable the relatively delicate horny layer, while in the repeated contact of school-children with their playmates we find a very fruitful source of contagion. Whatever the relative importance of internal as opposed to external causes, it will not be denied that digestive disturbances are the common heritage of the human progeny, and that a not inconsiderable proportion of these is preventable.

We are faced, on these premises, with a problem which would appear tolerably easy of solution. But there are a number of conditionals, and of these the greatest are the spectres of ignorance and prejudice. A great deal could be done at the source, which still remains the insanitary and overcrowded home. The welfare centres and prenatal clinics have a magnificent opportunity. Apart from control and inspection there should be organised attempts to explain the why and wherefore to the young mothers, many of whom still imagine that tinea is a disease due to a hidden worm. They might be taught, as Dr. M. S. THOMSON has emphasised in a paper read at a recent meeting of the Maternity and Child Welfare Group of the Society of Medical Officers of Health, that too much clothing and too strong a soap are as frequent a source of skin trouble as neglect to provide a warm covering and the proverbial Saturday bath. Dr. THOMSON's analysis of 500 cases attending the out-patient department at the Belgrave Hospital for Children is as follows:—

| | Cases. |
|---|---|
| *Lichen urticatus* | 132 |
| Impetigo | 99 |
| Eczematous and traumatic dermatitis | 116 |
| Scabies | 30 |
| Ringworm of the scalp | 30 |
| Ringworm of the body | 18 |
| Chicken-pox | 18 |
| Pediculosis capitis | 12 |
| Ichthyosis | 9 |
| Pityriasis alba | 6 |

Of the remaining 21 cases the most important were 3 of lupus vulgaris, whilst among them were also examples of hydroa æstivale, pediculosis corporis, pityriasis rosea, erythema nodosum, erythema multiforme, molluscum contagiosum, scleroderma, mange, and psoriasis.

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[1] Ministry of Health. Cmd. 693. H.M. Stationery Office. 1920. 1s.

The prevalence among them of lichen urticatus (strophulus) is remarkable, while the number credited to pityriasis alba seems unduly small The omission of congenital syphilis from the list is no doubt due to the fact that these cases are treated in another department of the hospital The practitioner will do well to remember the ever present possibility of such cases masquerading as harmless intertrigo, for on his circumspection may depend not only the future history of the little patient before him, but also the fate of children yet unborn There is nothing in medicine more preventable than congenital syphilis, as Dr D NABARRO emphasises in his article on its treatment which appears on p 1108 Pediculosis capitis accounted for 12 cases in Dr THOMSON's series, and he warmly recommends the treatment with 1 in 40 carbolic devised by Dr A. WHITFIELD This is, as he states, invariably successful, and if it could be enforced as a prophylactic measure in all children of school age on the same day in three or four consecutive years, it is more than likely that the parasite would become extinct In a second paper read at the same meeting and printed on p 1126, Dr A. M. H GRAY emphasised the importance of scalp hygiene. Apart from such gross infections as pediculosis and ringworm, which are likely to be spread by the indiscriminate interchange of hairbrushes and hats, it is probable that the organisms of seborrhœa are conveyed in the same way Let anyone who doubts the prevalence of this troublesome condition attend a Sunday afternoon chapel service at any large school, and place himself in a seat of vantage in rear of the juvenile congregation. Black coats form a good background for white scurf, and the observer will be struck by the high percentage of infected individuals. If it be true, as believed by many authorities, that seborrhœa of the scalp is a precursor of premature baldness in men, this most unwelcome sequel might be combated at school age with more prospect of success than when it has become established The almost invariable association of seborrhœa capitis and acne vulgaris with comedo formation suggests that here also we have a preventable sequel of scalp infection It should be the school doctor's duty to place himself in that observer's position from time to time, and call the attention of the matron or nurse to such of their charges as manifest the symptom, frequent shampoos with sulphur, salicylic, and resorcin soaps are the simplest and best treatment. It should be made a serious offence for children to use any but their own brushes, combs, and towels, and a very active supervision should be kept on the hygiene of the sports' changing rooms, whence almost all epidemics of "scrum pox" (impetigo) and dhobie itch (tinea cruris) take their origin The hairdresser's shop should be subject to periodical medical inspection and control, many of the more obvious instruments of infection, such as the machine-driven rotary brush, have been banished, but others still remain, and it would be interesting to know how often the ubiquitous clippers are taken to pieces, cleaned, and sterilised

The care of the child's skin, until it reaches the age when a personal interest and pride have been aroused, is thus seen to require the unremitting attention of midwives, monthly nurses, mothers school nurses and, last but not least, the school doctor It is to him especially that we would recommend a careful study of the question, for it is from him that the requisite knowledge, without which no progress can be made, must emanate

# Annotations.

"Ne quid nimis."

## SILICA AND TUBERCLE.

THE report upon the work of the Miner's Phthisis Medical Bureau of South Africa for the year ending July 31st, 1924, is drawn up in the form familiar to those who regularly study this important publication [1] It contains a vast amount of statistical information, the records of the Bureau now being available for eight years, and is worthy the careful attention of all who are interested in this aspect of industrial medicine The gold mining industry of the Transvaal spends about £800,000 annually in compensation to mine workers and their dependents, and the payment of all awards is based solely upon the certificates issued by the Bureau, the members of which are appointed by and responsible to the Union Government alone These officers have, therefore, a most responsible duty to perform, and we believe that it will be generally acknowledged that these duties are performed conscientiously and well

During the year under review no less than 33,775 examinations were carried out at the central office, and some 800 visits were made to various mines. As in previous years, the importance of radiography in the diagnosis of early simple tuberculosis and of early simple silicosis is emphasised. Since 1916 the Bureau has accumulated medical and radiographic records of over 50,000 European men and 14 000 natives, and it is therefore entitled to speak with a great deal of authority Nevertheless, it may well be that the difficulty of arriving at a true and complete knowledge of the condition of an individual's chest is beyond the powers of such diagnostic methods as we possess at present. The problem of the relationship of simple silicosis to tuberculosis is, of course, an extremely difficult one, very often the medical man would doubtless prefer to adopt the attitude of scientific doubt, yet by law he is required to make a definite pronouncement, and a diagnostic system once adopted is difficult to depart from. The clear-cut conception, prevalent in this country, of miner's phthisis as a form of tuberculosis occurring in individuals whose lungs have been previously damaged by exposure to silica dust is not entertained in South Africa; indeed, the very term "miner's phthisis" is never used in the Bureau, but the disease is always referred to as "silicosis," irrespective of whether it is complicated by tuberculosis or not For some time Dr W Watkins Pitchford and his colleagues have been inclining to the view that in the development of silicosis the presence of pre-existing tuberculosis cannot be neglected, and in this report they go even further On p 7 it is stated that if tuberculosis could be abolished from the mines, very few, if any, cases of silicosis would arise under the present conditions of freedom from dust. Again, on p 13, discussing the incidence of simple silicosis and its detection in one case in the primary stage—i.e, without a precursory ante-primary stage—Dr Watkins-Pitchford states that it "was probably due to an unusual activity of that tuberculous infection which, as I believe, is the exciting cause of at least the great majority of cases we class under simple silicosis." The basis of this belief seems to be the fact that cases of silicosis are still being produced, and in increasing numbers, every year (p 6), though the average dust content of underground air has fallen from 4·0 mg per cubic metre in 1915 to 1 1 mg in 1924 But it is quite conceivable that if the chemical theory of the action of silica now generally accepted be the correct one, silica is chiefly dangerous in its most finely divided state The grosser particles may have been eliminated, and, indeed, to the unaided senses the clarity of underground air leaves nothing to be desired, but the finest particles, those most easily dissolved in the tissues of the lung, still persist. It is at least as difficult to explain the incidence of silicosis under modern conditions on the assumption that the inhaled dust acts only in combination with the tubercle bacillus. There is no reason to suppose that more tuberculous recruits, either European or native, enter the service of the mines now than in former years. And although native workers are not examined radiographically to the same extent as are the Europeans, it is surely reasonable to suppose that the simpler diagnostic methods are as carefully and efficiently employed now as in days gone by. The difficulties and the enormous labour involved in the thorough initial and periodic examination of this enormous industrial population must be obvious, and there can be no doubt that a high average of success in diagnosis is attained on the Rand. Nevertheless, diagnosis is by no means a perfect science; finer lesions must inevitably be undiscoverable from time to time, and there must be a danger in developing pathological theories on a basis of clinical observations.

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[1] Report upon the Work of the Miner's Phthisis Medical Bureau for the Twelve Months ending July 31st, 1924 Cape Town Cape Times. 1926 Pp 56 4s

Silica and its relation to the tubercle bacillus is the big problem with which the Miner's Phthisis Bureau has to contend, and we have dwelt chiefly on this aspect of the report. *But the publication contains* much other matter which is equally worthy of serious attention.

## INHERITANCE OF PERONEAL ATROPHY.

A REMARKABLE family afflicted with peroneal atrophy has recently been described by Dr. Madge Thurlow Macklin and Dr. J. Thornley Bowman.[1] It presents an excellent opportunity for study of the disease from the point of view of inheritance, since five generations are affected and 21 of the 101 persons in the direct line of descent show peroneal atrophy. These writers conclude that the condition is dominant to the normal and is not sex-linked; in a large family with one affected parent half the children are likely to develop it whether the signs are apparent at the time of procreation or not. No member of the family reported has inherited more than a single factor for peroneal atrophy, and it is not known what would be the result of inheriting a factor from both parents. The question arises whether it is safe for members of an affected family to marry, and here the present investigators give a pessimistic verdict. They say: "Although it is safe for persons having a dominant factor for disease in their family to marry if they themselves are free of it, the same cannot be said of peroneal atrophy, for one cannot tell until one is past middle age and so past the reproductive period whether one has inherited the disease. The only safe rule for all persons who are born of affected parents, or born of parents who died young, but who had come of affected stock, is either not to marry or to take absolutely safe precautionary measures against having children. This applies to unaffected as well as affected children of affected parents." Males and females suffer equally. The disease does not seem to make any difference to the longevity of the individual, but it produces very serious crippling, and Dr. Macklin and Dr. Bowman consider that strict precautions against having children are necessary because only thus can it be eradicated from the community; sporadic cases in families which give no previous history are explained on the supposition that the parents have the disease latent and would develop it in later life if they lived long enough. They comment on the fact that their conclusions differ from those of Herringham, who described a somewhat similar family in which only males were affected, the disease being transmitted by unaffected females to their sons except in one instance in which an affected father had an affected son. Apart from this one case the record of this family suggests that peroneal atrophy is sex-linked and recessive, but Herringham himself remarked that this type of inheritance is not typical of the disease except as it occurs in this particular family. The present investigators suggest that possibly the family described by Herringham was suffering not from peroneal atrophy, but from some form of distal myopathy, and that the difference of inheritance is explicable on this basis; the fact that atrophy of the forearms was an almost constant feature in Herringham's cases, but is absent in those now reported, lends colour to this suggestion. In this respect the present cases differ from those described by Charcot and Marie, and Tooth; peroneal atrophy without wasting of the forearms is a rarer type, and patients corresponding to Herringham's are more commonly met with. It is generally considered that as the disease does not usually come on later than the second decade of life it is rather unlikely that parents will develop it after their children have been born. It is possible, however, that the signs may be so slight as to escape notice during several generations, which would explain the apparently sporadic cases. A gross example might be produced by any extra strain, such as infection, thrown on cells hereditarily weak. Ormerod and Batten report cases following an attack of measles. This work of Dr. Macklin and Dr. Bowman, by comparison with that of Herringham, shows that there are, at any rate, two types of peroneal atrophy distinguishable clinically and by their method of inheritance. It shows the risk that a member of an affected family may run of giving it to his children. Probably, however, there are other types of the disease varying in severity and method of transmission, so that in isolated cases in which the family appears healthy or in which no family history can be obtained, no very definite prognosis can be given either for the patient or his offspring.

## BERNHARD HEINE: A PIONEER IN EXPERIMENTAL PHYSIOLOGY.

A PATRIOTIC if belated assertion of the claim to surgical fame of an almost forgotten German worthy deserves acknowledgment. The family of Heine was well known in South Germany through its medical members, one of whom, Johann Georg, was the founder of a celebrated orthopædic institute in Würzburg, and another, Jakob, who was ennobled and became von Heine, gave his name (in Germany at least) to the Heine-Medin disease, also known as anterior poliomyelitis. It appears that Bernhard Heine, the nephew of Johann Georg, whose daughter he married, was a pioneer of bone surgery. J. G. Heine's orthopædic institute was devoted to the mechanical treatment of deformities, and in it the making and fitting of appliances were carried out with great skill. Probably experiences in his uncle's workshops led Bernhard Heine to turn his attention to the invention of an osteotome. This ingenious but apparently complicated machine achieved a great reputation, and in 1837 Heine visited Russia on the invitation of the Emperor Nicholas in order to instruct Russian surgeons in the use of his instrument, hundreds of which seem to have been sent to St. Petersburg. With his osteotome Heine claimed to be able to perform all kinds of operations on the bones, and to remove parts of them of any desired size at any depth and in any direction. He performed a large number of experiments on dogs in order to study the processes of repair and regeneration of bone. Many of the preparations which he made are now in the Anatomical Institute of the University of Würzburg and have recently been carefully studied with the help of X rays. They form a great part of the subject-matter of a volume of essays[1] in which his pioneer work has been recalled. Despite the fact that Heine relied entirely on naked-eye appearances and that results were often complicated and processes

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[1] Journal of American Medical Association, Feb. 27th, p. 613.

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[1] Bernhard Heine's Versuche über Knochenregeneration. Sein Leben und Seine Zeit. Von der deutschen Gesellschaft für Chirurgie anlässlich ihre 50 Tagung den Fachgenossen unterbreitet. By Drs. K. Vogeler, E. Redenz, H. Walter, and Prof. B. Martin, with a preface by Prof. A. Bier. With 105 illustrations in the text and one portrait. Berlin: Julius Springer. 1926. Pp. 224. 7.50 Reichsmarks.

obscured by suppuration, it appears that he anticipated by some years the observations of Flourens and Ollier on the regeneration of bone and on the parts taken respectively by the periosteum and the bone-marrow in forming new bone. Bernhard Heine received honours from the Emperor of Austria, the Kings of Prussia and Bavaria, and the ruler of his native country of Württemberg. He became professor honorarius of the University of Würzburg, and in 1844 he was made extraordinary professor of experimental physiology. His communications to the Academy of Sciences in Paris were favourably received and won a prize for him in 1838. He died at the early age of 46 in Switzerland, whither he had gone to seek relief from pulmonary tuberculosis.

It is remarkable that the work of such a man should have been almost completely lost sight of for so many years. There is no mention of his famous osteotome or of his work on bone growth in Hoffa's text-book of Orthopædic Surgery, although Hoffa himself was a professor at Würzburg and gives a good account of J. G. Heine's orthopædic institute. Any reproaches that might have been founded on German neglect of a native hero of pathology and physiology are set aside by the publication of this interesting book, in which Heine's countrymen have fully vindicated his right to be accounted a pioneer in the investigation of the phenomena attending injuries and diseases of bone.

## BIRTH INJURIES TO THE EYE.

AT the discussion on this subject at the recent annual congress of the Ophthalmological Society[1] Dr. Comyns Berkeley, speaking for himself and the majority of his obstetric colleagues, professed profound ignorance on the subject. As a matter of fact, it is safe to say that the majority of ophthalmic surgeons have never seen a case of retinal hæmorrhage in a newly-born infant. But this is simply because an ophthalmoscopic examination of an infant within the first week of life is hardly ever undertaken. When a series of systematic observations of this sort has been carried out the results have been somewhat surprising. Drs. Ernest Thomson and Leslie Buchanan, more than 20 years ago,[2] quoted continental authorities who had observed retinal hæmorrhages following normal labour respectively in 10 per cent., 32 per cent., and 20·5 per cent. of all cases, and Dr. Thomson, in his opening remarks at the recent discussion, so far confirmed these figures that he found the percentage of Glasgow cases somewhere between 10 and 20. Mr. F. A. Juler, who had examined a series of 50 cases at Queen Charlotte's Hospital in London, arrived at a similar conclusion. The great majority of these cases are slight retinal hæmorrhages which clear up, leaving no trace after a few days. In some cases, however, the hæmorrhages, occurring at the macula, may leave permanently serious effects, and it is freely surmised that certain defects in one eye only, discovered in later life, including cases diagnosed as "congenital amblyopia" may in some instances be due to this cause. It is to be remarked that hæmorrhages are by no means confined to those cases where instruments have been used. They apparently occur in many cases of prolonged labour and non-instrumental delivery, and even in cases where labour has been perfectly normal or even premature. Obviously rules as to prophylaxis are very difficult to formulate, and we cannot complain that until this can be done obstetricians take little interest in the matter. One reason why such ophthalmoscopic examinations are not more frequently made is doubtless the extreme patience and tact required in the case of a new-born baby; but before any useful conclusions can be drawn as to their connexion on the one hand with prolonged natural labour, and, on the other, with the use of instruments, this will have to be done. Other ocular lesions occur. Apart from sensational cases which have been recorded, such as extrusion of the eyeball on to the cheek as the result of instrumental pressure, or the gouging out of an orbit by the fingers of a doctor who had mistaken it for an anus, perhaps the most interesting lesion is the rupture of the posterior elastic membrane of the cornea, described by Dr. Thomson and Dr. Buchanan first in 1903 and again at the recent discussion. In these cases there is subsequent formation of cicatricial tissue which may remain as a permanent linear scar. These scars are always vertical, or approximately so, a fact probably related to the direction of pressure by the forceps. They naturally escape notice in most cases until the child's vision is found to be defective in one eye and the corneal scar is discovered. In some cases a considerable amount of corneal astigmatism results, and it was even suggested by some speakers that some of the cases of high monocular myopia, which are not very uncommon, may owe their genesis to instrumental pressure at birth. In these cases, although a rupture of Descemet's membrane might account for a good deal of astigmatism, one would have to suppose that in order to produce a high degree of myopia in both meridia the sclera had yielded to the pressure of the forceps.

## SYMPTOMS OF CORONARY OCCLUSION.

THE literature of the interesting condition of coronary occlusion is increasing rapidly. We published a leading article in our issue of Jan. 9th last giving a brief résumé of some of the chief clinical manifestations of occlusion of branches of the coronary arteries. The case described in THE LANCET of May 1st by Dr. E. Bulmer and Dr. F. W. Mason Lamb is specially noteworthy, not only for its rarity, but also for the care with which it is described and the suggestive comments on the pathological conditions observed. The case was one of coronary thrombosis in a man 27 years of age with a past history of syphilis and of subacute or chronic nephritis with acute exacerbations. The thrombosis occurred on the site of an atheromatous ulcer in the left coronary artery. Microscopically, a widespread deposition of cholesterin and of a special type of fat was observed in some of the larger vessels, including the aorta and left coronary artery. The authors suggest that the premature death of the patient may have given an insight into the pathology of arterio-sclerosis in what may be called the pre-fibrotic stage. A critical study of the clinical features of coronary occlusion has recently been published by Dr. Louis Hamman.[1] He gives an interesting account of the anatomy of the coronary vessels, quoted largely from Gross,[2] and mentions the observation made by him that anastomoses throughout the coronary circulation become more extensive and more effective with advancing years. He suggests that, other things being equal, the heart of a man at 60 years of age is better prepared to withstand the effects of coronary occlusion than that of a man of 20. He maintains that the results of coronary occlusion depend upon the size and situation of the branch obstructed, the rapidity with which it occurs, the condition of the general and coronary circulations, and the age of patient. Dr. Hamman gives a useful classification of the main symptoms in tabular form in four groups. The first comprises the immediate symptoms of the occlusion—viz., anginal pain with shock, prostration, fall in blood pressure, and suppression of urine. The second group includes the symptoms associated with the myocardial damage—dyspnœa, Cheyne-Stokes breathing, the results of passive visceral congestion, and the disturbances of cardiac rhythm. The third is devoted to the symptoms resulting from the myocardial infarct, including fever, leucocytosis, pericarditis, embolic phenomena, cardiac aneurysm, and rupture of the heart. The fourth group is devoted to the additional symptoms referred to other systems which sometimes complicate the diagnosis, such as nausea, vomiting, diarrhœa, and those due to vasomotor and nervous disturbances. He discusses each of the main symptoms in detail and quotes illustrative cases. He stresses the importance of the embolic sequels of coronary occlusion and believes that they are of greater frequency than pericarditis, and of equally decisive diagnostic significance. Dr. Hamman gives a helpful account of the diagnosis and treatment of the condition. His paper is rendered more valuable by a useful bibliography, and we can commend it to our readers as an interesting summary of the main clinical features of this important pathological catastrophe.

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[1] THE LANCET, May 22nd, p. 994.
[2] Trans. Ophth. Soc., 1903, p. 296.

[1] Bulletin of the Johns Hopkins Hospital, vol. xxxviii., No. 4, p. 273, April, 1926.
[2] The Blood-supply to the Heart, New York, 1921.

## ARTHRITIC MUSCULAR ATROPHY.

THE intensity and rapidity of the muscular wasting associated with acute arthritis has long excited interest; the processes at work are evidently different from those which produce wasting from simple disuse. Miss A. E. B. Harding,[1] working in the surgical department at University College Hospital, has measured the consumption of oxygen involved. Experimental streptococcal arthritis of the knee-joint in rabbits leads to great wasting of the thigh muscles, and from her measurements it is clear that these wasted muscles use more oxygen per unit of weight than normal muscle, and in many cases more than is consumed by the whole weight of the unwasted muscle. As a control she produced atrophy from disuse by putting up the animal's legs in plaster for several weeks; wasting ensued and the oxygen consumption was diminished proportionately. It was also noticed that the arthritic muscles were much more irritable. It seems clear that in them an active katabolism is at work, and in this way they resemble overused rather than disused muscles. Raymond and others have found that section of the corresponding posterior roots prevents arthritic atrophy, so that the stimulus to excessive activity is presumably peripheral in origin.

## THE OSLO CONFERENCE ON THE HEALTH OF SEAMEN.

IN THE LANCET of Jan. 9th we referred to the initiative taken by the Norwegian Red Cross Society in establishing Red Cross medical stations for the treatment of merchant seamen of all nations in the seaports of Norway, and to the efforts which are being made, under the auspices of the League of Red Cross Societies, to extend this scheme to other countries. It was stated then that the Norwegian Red Cross hoped to organise this summer a tour of inspection of certain ports in Norway in order that those interested might study the work being done for seamen. From the June number of the *World's Health*, which is entirely devoted to articles on the health and welfare of the seaman, we learn that the proposed tour, now called an Itinerant Conference, will take place from June 28th to July 5th, and that visits will be made to Oslo, Bergen, and Trondhjem. The King of Norway has lent his patronage to the conference. Among others, Roald Amundsen will speak on the welfare of the sailor, and leading Scandinavian and other doctors are giving lectures on different aspects of the health of seamen. Prof. Almkvist's paper on "Seamen and the Venereal Diseases," and Dr. Heitmann's on "Seamen and Tuberculosis," should throw fresh light on the incidence of these diseases in the merchant service. At all the ports visited there will be special demonstrations at the Red Cross medical stations for seamen, and the delegates will be given every opportunity to see what Norway, which sends a greater proportion of her sons to sea than any other nation, is doing for her merchant seamen. The Norwegian Red Cross scheme does not propose to set up new and expensive machinery in the ports for treating disease among sailors. All that it advocates is the coördination of existing forces. A doctor in each port would undertake, under the ægis of the Red Cross, to act as medical officer for seamen, treating, at the usual rates, those complaints which come within his province, and sending on other cases to hospitals or specialists. Hitherto the sailor in a foreign port has been at the mercy of the first plausible quack to approach him, and has often not known where to turn to obtain reliable treatment. In many ports he has been more familiar with the Red Lamp than with the Red Cross. If the Norwegian Red Cross scheme becomes universal, as it is hoped that it will, the seaman will in future be sure of help and advice, whether at home or abroad.

## HISTORY OF SURGERY IN EDINBURGH.

THE opening next week of the reconstructed department of surgery in connexion with the bicentenary of the Faculty of Medicine of the University of Edinburgh lends interest to the early history and development of a still older foundation of surgery in that city. The Royal College of Surgeons of Edinburgh has been a corporate body since on July 1st, 1505, the town council issued a decree formally uniting the Barbers and the Surgeons and constituting them one of the Crafts of the Burgh. In a chapter dealing with early records of the Craft, Mr. C. H. Creswell[1] has collected a quantity of most interesting information. In 1567 Queen Mary granted the Craft a Letter of Exemption by which members of the Craft were freed from the duty of bearing arms "provided that they be present with our armies ready to do their cure and duty to all such persons as shall have want thereof." It is pleasing to note that the Craft were as jealous or even more so of their privileges as any Trade Union of to-day. For instance, about 1635 two of the official "visitors" caught a surgeon who did not belong to the Craft—i.e., a non-union man, by name George Bell, and accused him of breaking their statutes by "laying a shearcloth about the laird of Fedderat." A shearcloth, we may explain, alias cerecloth, is a waxed sheet used for the preserving or embalming of a dead body. The contumacious George Bell confessed not alone to wrapping the body in the shearcloth but also to having made it, to having brought it to the house, and also to having embalmed the body. However, on promising never to do it again he was discharged. The Craft was also down on "covering," for in 1670 there was a member, one David Pringle, who was Apothecary and Surgeon Barber to the Heriot Hospital. About 7 A.M. on a certain day he was suddenly ordered to cut the hair of all the boys in the hospital, some 60 in number, in order that they might appear tidy before the magistrates. Being pressed for time Pringle sent a boy for another barber, who duly arrived but who was not licensed to practise in Edinburgh. His name was Wood, and at the instance of the Deacon of the Craft—i.e., the President—he was lodged in the Tolbooth, while Pringle was summoned before the Craft and eventually the case came before the Privy Council, and in the end Pringle acknowledged his error and was duly restored to all his former privileges. An interesting point which is found here and there throughout the book is the apparently high prices ruling; for instance, in 1647 the Craft took a house in which to hold their meetings in Dickson's Close and various furniture was provided, among the items being "a green table cloth" which cost £30 and "half a dozen of chares" £36. Some 70 years later—namely, in 1718—when the title of the Incorporated Surgeons had become

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[1] Journal Path. and Bact., 1926, xxix., 189.

[1] The Royal College of Surgeons of Edinburgh: Historical Notes from 1505 to 1925. By Clarendon Hyde Creswell, late officer and sub-librarian of the College. Privately printed for the College by Oliver and Boyd, Edinburgh and London. 1926. Pp. 315. 10s.

"Royal College of Surgeons," Alexander Monro gave some anatomical preparations to the College and that august body apparently celebrated the occasion by a banquet, for a receipted bill for 38 pounds Scots bearing the same date as the gift of the preparations containing the following items: "To Charles Hay for a Chicken Pye £7 18s., and for Ale Brandy and Cheese £3 15s." The size of the Pye is not stated. We do not know, moreover, what the value of the "pound Scots" was in 1718, but as in 1600 it was only 1s. 8*d*., the table cloth, the "chares," and the Pye may not have been such extravagant luxuries as they seem, nor yet the half-gallon of ale "which you ordered the Lads" mentioned on p. 53 and costing 8*s*. The author deals with the further history of the College and its connexion with the Infirmary in an interesting way. A prefatory note to the book tells us that it was uncompleted at the time of Mr. Creswell's death on active service in October, 1918, and the work was edited and completed from material already collected by Mr. Creswell by two writers whose initials are given as A. M., and A. L. T. They seem to have done their work admirably except in one respect. The manner in which Latin inscriptions and phrases are printed does them no credit. Thus, on p. 104 the phrase "ad futuram re memoriam" should obviously read "ad . . . rei memoriam," and on p. 103 is an inscription from a piece of plate given to Mr. Thomas Hay which as given will make that eminent Scots latinist, George Buchanan, turn in his grave. The word "Viro" appears as "Nero," "viduis" appears as "vidius," and what should be "Vas hoce" appears as "Nas houe." Mr. Thomas Hay, we may add, received the piece of plate for his services in regard to the Widows' Fund of the College, an admirable pensions scheme which the various medical bodies in this country might well follow.

## OPEN-AIR SCHOOLS.

IN this country, where our cities are robbed of much of the sunlight by smoke, progressive educational authorities seek to get as much fresh air and sunlight as possible for school-children and especially for those with physical defects. In New Zealand, however, the problems of climate and sunlight have scarcely to be faced, with the unfortunate result that the scheme for open-air schools in that country, of which mention has already been made in this column,[1] is opposed by a certain amount of deep-rooted prejudice. To combat this an Open-Air Schools League has been instituted with the object of forming such a body of public opinion that the way will be made easy for the authorities to adopt the open-air school as a standard for schools throughout the country. With this end in view the League has started the publication of a small quarterly journal entitled the *Open-air Life*, and it has issued a second edition of a pamphlet reprinted from the *Christchurch Press*, wherein the case for the open-air school is emphatically urged.[2] The League has the backing of the medical profession, for in 1923 the New Zealand branch of the British Medical Association passed a unanimous resolution "that the educational authorities be urged to take into consideration the desirability of open-air schools when framing their school building proposals in the future." The Minister of Education, Sir James Parr, a patron of the League, has recently closely investigated the working of four open-air class-rooms, and as a result of this inquiry he is "to request the education boards of the Dominion generally to erect in suitable localities, in place of ordinary class-rooms, open-air class-rooms." The Open-Air Schools League starts with many advantages, and its publications should do much to purge school committees and boards of their old-fashioned preference for the solid school building and of their suspicion of the "draught" of fresh air.

## "NON-FREEZING" GAS.

THE annoyance caused by freezing at the outlet of a gas cylinder has become of considerable moment since the use of nitrous oxide and oxygen in major surgery became common. This freezing occurs owing to the fact that nitrous oxide gas becomes solidified into a sort of firm snow if exposed to a temperature as low as about −99° C. This low temperature is achieved when the liquid nitrous oxide of a cylinder escapes in gaseous form through the small outlet of the cylinder for a considerable time. Then to the snow of the gas itself is added ice which is formed from the freezing of water vapour in the atmosphere by the very extreme cold in the neighbourhood of the outlet of the cylinder. In order to obviate this process, resulting inevitably from conversion of the compressed liquid nitrous oxide into its gaseous form, it has been usual to employ some sort of small lamp to heat the outlet of the cylinder. The freezing which we have described takes place much less readily when the cylinder is used in the vertical than when it is used in the horizontal position, but even with the vertical position solidification at the outlet of the cylinder is an obstacle which has to be guarded against. In an improved form of apparatus described on p. 1044 of THE LANCET of May 29th, no provision is made for warming the cylinder's outlet, and it is expressly stated that a lamp is no longer needed if Messrs. Coxeter's "non-freezing" gas is used. This term is not literally correct, for nothing can prevent the freezing of nitrous oxide if it is exposed to sufficiently low a temperature. What Messrs. Coxeter have done, however, is to dry their nitrous oxide and the interior of their cylinders by special processes and thus to exclude as far as possible the presence of freezable water vapour with the issuing gas. Consequently the actual freezing at the outlet of the cylinder becomes much less common. Any step is welcome which reduces the complexity of anæsthetic apparatus, even if it is only the removal of a lamp. The chief drawback to modern methods of anæsthesia appears to us to be the introduction of involved apparatus. This leads to too great attention being paid to mechanisms and too little to the human body. The first requisite of a good anæsthetist is that he shall have constant recognition of the condition of his patient. The student of anæsthetics to day is rather apt to have his attention distracted from this essential matter while he attends to the proper working of tubes and air-ways.

## HOUSING AND HYGIENE.

THE influence exerted upon the health of the people by housing has often been claimed and less often demonstrated, a point to which we recently drew attention.[1] The fact that those who live in slums are unhealthy has been demonstrated beyond contradiction, but the problem is to discover whether the poverty-stricken and broken-down failures of life gravitate to the slums, or whether dwelling in slums causes breakdown in health. In the years immediately following the war, when shortage of houses was acute and overcrowding was extreme, mortality-rates fell, particularly for tuberculosis, and fell below those of the pre-war period; but at that time food-supplies had again become adequate, and the value of real wages was high. In other words, this evidence pointed to an inadequate food-supply, which is normally associated with poverty, as being a more powerful influence in causing mortality than slum environment. Dr. A. K. Chalmers, using figures for 1921–23, has recently approached the subject,[2] upon which he is an authority, from another aspect; he takes Scotland as possessing a larger proportion of tenement dwellings than England, where even Manchester has been described as a city of cottages of four, five, or more rooms. One point distinguishes the two types of dwelling; the cottage type is open to freely moving external air; in the tenement type, air enters from an unventilated common stairway or close. He finds here a possible reason why in Scotland mortality for each of the three groups of infectious diseases of infancy and childhood exceeds that of England. On the other hand, for certain diseases which are not air-borne—e.g., diseases of the circulation and cirrhosis of the liver—the mortality of England exceeds that of Scotland, from which the deduction may be drawn that the English population is not innately more healthy than the Scottish. Nephritis is more prevalent in Scotland, possibly a late result of a higher incidence of scarlet fever in childhood. Cirrhosis of the liver, usually accepted as an index of chronic alcoholism, is more prevalent in England. The position, then, as Dr. Chalmers presents it, is that lack of free uncontaminated ventilation—such as is exemplified by the tenement housing system of Scotland—is associated with greater mortality from infectious diseases. The factors concerned in housing are manifold, but something is gained from light thrown on how to build. Better houses attract better tenants and in time raise the social status and morality of the community; but the word "better" should, on the evidence now presented, mean dwellings with free access to outside air—apart from all other considerations. Hence a country cottage should be preferable to the London flat. Nevertheless, housing alone cannot determine the health and welfare of a community; economics are probably more powerful. A self-respecting population can make even wretched dwellings reasonably habitable—the condemned system of back-to-back houses has much in common with the arrangement of West-end flats. The inhabitants are at least as important as the accommodation they inhabit, and a degenerate population can convert the best accommodation into hopeless slums; even palaces, in times of revolution, have become pigstyes. When bad housing, as is usual, is occupied by bad tenants, the circle is vicious, each accentuating the influence of the other.

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[1] THE LANCET, 1924, ii., 1207.

[2] Open Air Schools. A Popular Exposition. Reprinted from the Christchurch Press, New Zealand. Pp 12. 6d.

[1] THE LANCET, Jan. 16th, 1926, pp. 144–45.

[2] National Death rates in Relation to National Differences in Methods of Housing, Proc. Roy. Soc. Med., 1926, xix., 13–21.

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PENALTIES FOR FALSE STATEMENTS.—The Registrar-General has issued a memorandum drawing the attention of the public to the new penalties attached by Section 28 of the Criminal Justice Act, 1925, to false statements in connexion with marriages and the registration of births and deaths. The section came into force on June 1st, and the maximum penalty on conviction by summary process of giving false information for insertion in a birth or death register has been increased from £10 to £50; the time within which a prosecution can be undertaken has been extended to 12 months.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Wednesday, June 9th, at 3.30 P.M., Mr. Zachary Cope will give a special demonstration in surgery at St. Mary's Hospital, Paddington, and on Thursday, June 10th, Mr. Whiting will give a special demonstration in ophthalmology at the Royal London Ophthalmic Hospital, City-road, at 12.45 P.M. These demonstrations are open to all members of the medical profession without fee. The Chelsea Hospital for Women provides a two weeks' course from Wednesday, June 9th. There will be a course in genito-urinary diseases at the All Saints' Hospital from June 7th to July 3rd. From June 14th to 26th the City of London Hospital for Diseases of the Heart and Lungs will give a special course; demonstrations and lectures will be given in the various departments of the hospital, the whole of which is thrown open to post-graduates during the course. There will be a course, primarily for general practitioners, at the London Temperance Hospital from June 14th to 25th daily from 4.30 to 6 P.M. Courses will be held during July in cardiology, at the National Hospital for Diseases of the Heart; in dermatology, at the Blackfriars Skin Hospital; in neurology, at the West End Hospital for Nervous Diseases; and in ophthalmology, at the Royal Eye Hospital. There will also be an intensive course in medicine, surgery, and the specialties at the North-East London Post-Graduate College (Prince of Wales's General Hospital), Tottenham, N. Copies of all syllabuses, of the General Course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship at 1, Wimpole-street, London, W.1.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXXV.—TREATMENT OF CONGENITAL SYPHILIS IN CHILDREN.

THE principles of the treatment of congenital or of acquired syphilis in adults and children are substantially the same. While conceding that the older methods of treatment with mercury and iodides may have cured or greatly benefited a considerable percentage of cases of congenital as well as of acquired syphilis, most authorities to-day are of opinion that better results are obtained in all forms of the disease by combined therapy with arsenicals and mercury or bismuth. In practice, however, it is found that in many cases of congenital syphilis the beneficial results of the treatment are not so quickly observed as in recent cases of the acquired disease. The reason for this is obvious when one remembers that in the congenital disease (1) the spirochæte is often widely spread throughout the patient's body; (2) it may have been there from quite an early period of intra-uterine life; and (3) the spirochæte or its toxins may have produced more or less serious pathological changes in the tissues and organs of its victim.

*Diagnosis.*—Before condemning a child to a course of treatment which may extend over many months or even years, one should be reasonably certain of the diagnosis. The clinical diagnosis should, if possible, be confirmed by the Wassermann test, even when the case is obviously syphilitic, in order to control the duration of the treatment. The diagnosis established, treatment should be started forthwith.

### *Combined Arsenical Therapy.*

*Arsenic Preparations.*—One of the salvarsan preparations, together with mercury or bismuth, may be used. Preparations of the original salvarsan (606) type are not very applicable to children, so that the preparations which can be given in concentrated form are now generally employed. Among these may be mentioned novarsenobillon (N.A.B.), neokharsivan, neo-silver-salvarsan, sulfoxyl-salvarsan, stabilarsan, and sulfarsenol. The drugs most used in children's clinics are N.A.B. and sulfarsenol as they are the least toxic and quite efficacious. The other drugs are more likely to produce vaso-motor and other disturbances, such as vomiting, shivering, fever, and albuminuria.

The dose of the drug depends upon the size of the child; the initial dose of N.A.B. would be 0·05 g. for an infant a month old, 0·1 g. for a child 1–3 years, 0·15 g. for older children. During the course of six injections the amounts injected will increase respectively from 0·05 to 0·1 g., from 0·1 to 0·25 g., and from 0·15 to 0·3 or 0·45 g. The subsequent courses of injections will start with rather larger doses than the first and attain high maxima, but a dose of 0·45 g. N.A.B. should never be exceeded in a child of 12 years of age. The corresponding doses of sulfarsenol would be 1½ cg. for an infant a month old, increasing to a dose of 8 or 12 cg. at the end of the first course. For older children commencing doses may be 4 or 6 cg., working up to a maxima of 24, 30, or 36 cg. according to the age and size of the child. Even in older children it is advisable to start with a small initial dose, such as 0·1 g. N.A.B. or 6 cg. sulfarsenol, in order to test the patient's tolerance for arsenic.

*Mode of Administration.*—The drug is dissolved, immediately before it is required for the injection, in a small quantity of freshly distilled, recently sterilised water. The smaller doses do not require more than 1 c.cm. of water to dissolve them; for the larger doses 2 to 3 c.cm. are necessary. N.A.B. may be administered intramuscularly or intravenously; sulfarsenol, subcutaneously or intramuscularly. Intramuscular injections are usually made into the buttock, and in order to avoid the large vessels and nerves in this region, one selects a point above the horizontal line joining the anterior superior iliac spine and the top of the natal cleft. The point of injection should be somewhere along the middle third of this horizontal line. Before injection the part is sterilised with iodine, and after injection the puncture is sealed with collodion. Provided the injection of N.A.B. goes deeply into the muscles, this method is practically painless and is followed by no ill-effects. On the other hand, if the injection is too superficially made, it may be followed by considerable swelling, pain, and even necrosis. In order to obviate these possible accidents, the drug sulfarsenol was introduced for intramuscular and subcutaneous injections, and this drug is, perhaps, more largely used than any other at the present time for the treatment of congenital syphilis in infants, in whom intravenous injections are difficult to carry out. Subcutaneous injections of sulfarsenol may be made in the buttock, between the scapulæ, or into the abdominal wall.

When possible the injections of N.A.B. are given intravenously and preferably into a vein at the bend of the elbow. Some authorities use the external jugular or scalp veins for injections in infants, but unless the operator is experienced and skilled assistance is available, injections into these veins are not easy to carry out. I do not consider that it is justifiable to inject these drugs into the superior longitudinal sinus or to cut down to expose a vein for the purpose of injection. In older children if the injections cannot easily be made into a vein at the elbow, the N.A.B. should be given intramuscularly, as in infants, or sulfarsenol may be given subcutaneously or intramuscularly. For these injections the three-piece all-glass syringes supplied by Burroughs, Wellcome and Co. are the best I have come across. These syringes are also the best for taking blood from children for the Wassermann test.

*Mercury.*—As already indicated, reliance should not be placed solely upon the arsenic preparations, but mercury or bismuth should be used in addition. Mercury is given either in the form of hyd. cum cret., gr. ½ to 1, three times a day, or, better still, the ointment may be rubbed in once a day or pills of green iodide of mercury, gr. ⅙ to ¼, two or three times a day administered during the injections.

*Bismuth.*—During the last few years various preparations of bismuth have given most encouraging results; at the present time a considerable number of syphilitic patients are being treated with bismuth alone. Bismuth compounds in use include: (1) metallic bismuth in fine suspension, known commercially under the names neo-trepol, bismuthyl, bismostab, bismuth metal, &c.; (2) oily suspensions of bismuth salts, amongst which are trepol, muthanol, and luatol; and (3) a compound of bismuth and arsenic recently introduced by Levaditi, marketed under the name of bistovol. This, too, is an oily suspension for intramuscular injection, which should prove to be a valuable addition to our antisyphilitic remedies. A course of bismuth usually consists of 10 or 12 injections given once or twice a week, after which there is a month's rest.

*Salvarsanised Serum.*—Intrathecal injections of salvarsanised serum may be made with benefit to the patient, either in the lumbar region or into the cisterna magna, in cases of cerebro-spinal syphilis with a positive W.R. in the cerebro-spinal fluid This treatment may also be tried, either alone or after a malarial infection, in cases of juvenile general paralysis. Intravenous injections of N.A.B. would be given at the same time.

### *Duration of Treatment.—Results.*

In a disease like congenital syphilis it is well-nigh impossible to be certain that the disease has been eradicated. The aim of treatment should be (1) to cure the clinical manifestations of the disease for which the patient seeks advice; (2) to prevent their recurrence, and also, if possible, the appearance of other symptoms of congenital syphilis; (3) to render the blood W.R. negative, and to keep it negative if possible. A single course of arsenic injections with mercury or bismuth may clear up the patient's symptoms and even render the W.R. negative in a very young patient, but it is inadvisable to cease treatment at this stage. At least one course of combined treatment should be given after the W.R. has become negative, and thereafter mercury for one or two months or a course of bismuth each year should be given for a year or two, the blood being tested every three to six months. Should the reaction become positive again, more energetic treatment must be instituted. When children do not come for treatment until they are several years old, it may be necessary to give 30 to 40 or even more injections of arsenic before the W.R. becomes negative, and sometimes it may be impossible to get it negative even after 50 injections. Cases of cerebro-spinal syphilis with a positive W.R. in the cerebro-spinal fluid, and those with laryngeal and naso-pharyngeal ulceration are most refractory.

Epiphysitis and enlarged joints, interstitial keratitis, &c., should be treated on ordinary surgical lines; condylomata and mucous tubercles should be dusted with calomel powder. During the intervals between the courses of injections tonics may be advisable, such as malt and cod-liver oil, syrup ferri phos., or syrup ferri iodidi. General dietetic and hygienic details should also receive attention.

There are two groups of cases about which an opinion may be asked: (1) children who have positive W.R. but show no symptoms or signs of the disease; and (2) children, in syphilitic families but with negative W.R., who suffer from such vague conditions as malnutrition, debility, and so on. I think both these groups of cases should receive treatment, the former in order to prevent a possible development later on of such manifestations of syphilis as interstitial keratitis and other symptoms, which may not appear till puberty or even later. The latter group should be treated because the family syphilitic taint may be present, and good results have followed such treatment.

A very large proportion of children treated by the method show improvement, sometimes even after the first course of injections. Others may take longer, but in most cases the beneficial results are obvious; specific ulceration quickly heals, hæmoglobinuria ceases, fits become fewer in number or may be entirely stopped. Even mentally defective patients may show a considerable degree of improvement in their condition. Interstitial keratitis responds well to treatment, and if this is started early in the disease the inflammation clears up entirely, no opacity of the corneæ persisting in after life. Nevertheless, in spite of the latest forms of treatment, a considerable proportion of very young children succumb to the disease.

### *Toxic Manifestations.—Prophylaxis.*

On the whole, children are very tolerant to arsenic, but occasionally toxic symptoms of varying degrees of severity may be manifested. The commonest of these is vomiting; others are shivering, cyanosis, swelling of the face and limbs, diarrhœa, and rarely coma; albuminuria may also be produced. In prolonged treatment particular attention should be paid to rashes and incipient jaundice. When the vaso-motor toxic manifestations occur with each injection, sodium thiosulphate (g. 0·45) may be injected intravenously with each dose of N.A.B., but when jaundice or an arsenical rash threatens, the injections of arsenic should cease for a time and a daily injection of sodium thiosulphate be substituted.

When bismuth injections are being given, particular attention should be paid to the teeth and gums, and a mouth wash of peroxide of hydrogen recommended. The urine should be tested from time to time for the presence of albumin, and if this condition or a bismuth line on the gums should be present, treatment should be suspended for a time.

It has been known for a considerable time that if a syphilitic mother be treated during the course of a pregnancy with mercury, or preferably by injections of arsenic or bismuth, the child born after such treatment will be free from any syphilitic taint, and that it will probably remain healthy. This being so, it is the obvious duty of all practitioners to advise a syphilitic prospective mother to undergo treatment. For, although a case of congenital syphilis which is diagnosed early and properly treated may ultimately be cured, the child has to make a large number of visits to the hospital or doctor and must of necessity be pricked a large number of times; both of these factors may produce serious psychological effects.

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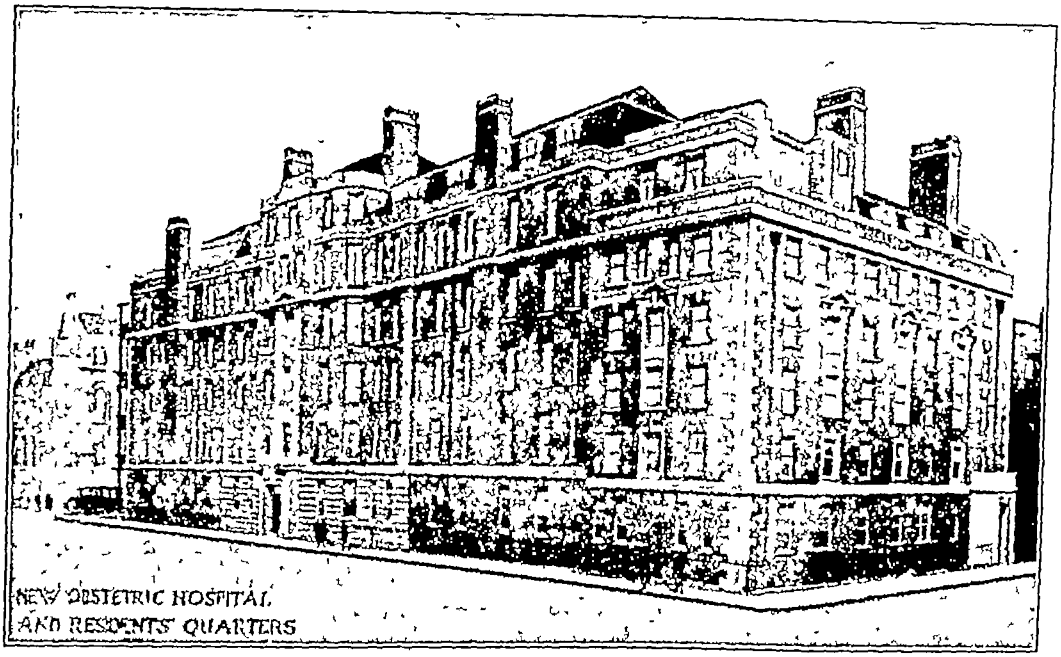
# Special Articles.

## ENLARGEMENT OF UNIVERSITY COLLEGE HOSPITAL.

### THE ROCKEFELLER GIFT.

ON the afternoon of May 28th the Prince of Wales visited University College Hospital and formally opened the new buildings whose foundation-stones were laid by the King and Queen just three years ago. The Maternity Hospital and Nurses' Home which now come into use are part of the Rockefeller Foundation's gift to this country for the advancement of medical science and education. It will be remembered that in 1920 the Foundation's trustees selected University College Hospital for a grant, and that £1,205,000 was given to the Medical School and College. This sum was allocated as follows: £435,000 as an endowment fund for medical research and education; £400,000 for the provision of 180 additional beds, including a new obstetric and gynæcological hospital; £370,000 for an institute of anatomy, and for an endowment fund for the maintenance of buildings and staffs. The donation was made without conditions and was so large as to allow the hospital authorities a free hand in the development of their work. It was made, however, in the interest of medical progress in general rather than for the benefit of a particular section of a particular community, so the Foundation considered that the sum needed to endow the beds of the new obstetric hospital should be collected in the British Empire and should not form part of an American gift. The success of the appeal launched by University College Hospital has already been recorded in our columns [1]; the 60 beds are now fully endowed with a capital sum of £180,000.



The new obstetric and gynæcological hospital, which is here illustrated, has been erected on the west side of Huntley-street and forms an annexe to University College Hospital. There are 30 gynæcological and 30 obstetric beds. Accommodation is provided on the premises for maternity students on duty and a senior member of the medical staff is to be in residence so as to undertake the management of complicated cases and give instruction in midwifery. There are already units of medicine and surgery at the medical school and the Unit of Obstetric Medicine, under the direction of Prof. F. J. Browne, will be the third and last of the teaching units. The out-patient maternity department will work in with the new hospital.

One hundred new beds have been added to the 300 in the main building by converting the nurses' quarters into wards, and this has made it necessary to find other accommodation for the nurses. An increase in the size of the hospital has involved an increase in the size of the staff, and the new Nurses' Home provides for about 250 nurses. The Home is a continuation of the Trained Nurses' Institute in Huntley-street, and those who live in it will be fortunate in their surroundings.

The Rockefeller Foundation's grant has already attracted other benefactions to University College Hospital, and the Prince of Wales completed his visit by unveiling a memorial tablet at the new Royal Ear Hospital, built by Lieut.-Commander Geoffrey Duveen in memory of his father and mother, Mr. and Mrs. H. J. Duveen. This hospital was previously situated in Dean-street, Soho, but the new building is at the junction of Huntley-street and Pancras-street beside the obstetric hospital, and thus forms part of the University College group. Lieut.-Commander Duveen attended the ceremony in May, 1923, when the King and Queen inaugurated the new extensions, and he was so impressed with the possibilities opened up by the help of Rockefeller Foundation that he gave £15,000 for the purchase of a site and £50,000 for the re-erection of the Ear Hospital in proximity to the other buildings. The hospital is now nearly complete, and will have three wards (each containing ten beds) for ordinary patients, and eight single-bedded wards for paying patients. There will also be ample accommodation for out-patients and a silence room with a capacity of nearly 3500 cubic feet which is designed to ensure accuracy in the examination of the deaf.

It was announced that the sum of £10,000 had already been given to the hospital in connexion with the appeal shortly to be issue on behalf of the General Maintenance Fund, and it was later revealed that the donor was Major Harold Wernher, chairman of the hospital Finance Committee.

The Prince of Wales was warmly received by a large gathering of guests and students. The American Ambassador was, unfortunately, prevented from attending, but was represented at the ceremony.

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[1] THE LANCET, March 27th, p. 673.

## IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *The Free State Medical Register.*

THE announcement made last week in the Irish press that an agreement had been reached between the Irish Government and the medical profession appears to have been in advance of the facts. A conference took place on May 26th between members of the Government and representatives of the medical profession, and the latter were made acquainted with the rough outlines of the legislation that the Government had in view. A further meeting was arranged for June 9th, and in the meantime all discussions that take place are confidential. The more or less intelligent anticipations of the Government proposals in the daily press need not, therefore, be regarded very seriously. It is stated in the newspapers, however, that immediate legislation is not intended, and that definite proposals will not be put before the Dail until the autumn. Nevertheless, it is likely that President Cosgrave will make a statement before the adjournment.

### *Annual Report on Mental Hospitals.*

The annual report of the Inspector of Mental Hospitals for 1024 has recently been issued. It is stated that the number of insane patients under care on Dec. 31st, 1924, was 19,381, being more by 138 than at the end of the previous year. Of the total number 84·1 per cent. were in district mental hospitals, 5 3 per cent. in private mental hospitals or in single care, 10 per cent. in Poor-law institutions, and 0 6 per cent. in the State Criminal Lunatic Asylum. At the end of 1924 the number under care in district hospitals was less by 659 than at the end of 1915. From 1915 to 1920 there was a steady fall in the asylum population, but since 1921 there has been a steady rise The number of first admissions in 1924 was 2100, which is equivalent to 66 per 100,000 of the estimated population, and there were 584 readmissions. The number discharged in the year was 1350, of whom 959 were discharged recovered. The number of deaths was 1092. The disease responsible for the highest proportion of deaths was pulmonary tuberculosis, with 211 deaths; the next highest cause being organic disease of the heart, which was responsible for 188 The Inspector comments favourably on the management of most of the asylums.

### *The Montgomery Lecture in Ophthalmology*

The Mary Louisa Prentice Montgomery Lecture in Ophthalmology was delivered in the Royal College of Surgeons on May 28th by Mr. Charles B. Goulden, ophthalmic surgeon to the London Hospital. Mr Goulden chose as his subject Accommodation, and he gave an interesting sketch of the history of the knowledge of the subject down to the present day, illustrating his lecture with lantern slides.

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## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

### *Statistics of Vaccination.*

THE Prussian Health Department has published a report on the results of vaccination in 1924. The number of vaccinations done was 1,027,695, and of revaccinations 880,186. In 7 per cent. of the children vaccination was postponed because of ill-health, and revaccination had to be postponed in 0 8 per cent. on the same account. Nine deaths were recorded amongst the vaccinated children; these included a case of pneumonia, two cases of gastro-intestinal catarrh, and two cases of convulsions, in one of which vaccination was negative. None of these can be ascribed to vaccination. In one case a child died from bronchitis, having obviously caught cold at the time of the vaccination. In two cases death occurred from septicæmia; in both of these the disease developed late, after the medical man had given the certificate. These last two cases may be regarded as connected with vaccination, but the immense number of vaccinations performed must be remembered. Other undesirable complications were: severe inflammation of the surrounding tissues, swelling of the lymphatic glands, cellulitis, erysipelas, gangrene of the pustule, chronic exanthem, and (in two cases) generalised vaccinia. Vaccination pustule developed by contagion in the family of the vaccinated child in 12 cases. In no case did syphilitic infection result from vaccination. Parents held back their children from vaccination in 52,699 cases (5 8 per cent. of the children subject to compulsory vaccination) and from revaccination in 9004 cases (1 1 per cent. of refusals). The number has increased since the preceding year, when only 3 75 and 0 8 per cent. respectively were held back. The opposition against vaccination is still growing, but there are remarkable variations in the different Government districts. In Hanover the number of children who did not attend was 18 per cent.; in Stettin it was only 1 1 per cent. The report gives some interesting local details. In one town in the Magdeburg district opponents of vaccination tried to hinder the public vaccinator in the performance of his duty and were accordingly prosecuted; in another town it was observed that mothers wiped away the vaccine immediately after vaccination. Sometimes the public vaccinators were requested to bind themselves to make good any damage caused by their treatment. All these troubles were obviously due to a systematic campaign arranged by the antivaccinationist association. Although many parents had to be fined there were only a few instances in which it was necessary for the police to bring the child to the public vaccinator.

### *The German Congress of Radiology.*

The annual congress of the German Radiological Society was recently held in Berlin and well attended by German radiologists and foreign guests, including Dr. A E. Barclay, of Manchester, and Prof. L. H. Edling, of Lund, Sweden. The chair was taken by Prof. Martin Haudek, of Vienna. Dr. O. Jüngling, of Tubingen, read a paper on the prophylactic application of X rays in cancer of the breast. He said that the value of the different methods of applying X rays in cancer could only be ascertained when the statistical records were drawn up on a uniform plan. The results obtained at the individual clinics still differed greatly. For the most part the application of rays in large doses had been given up, the more frequent administration of medium doses being now preferred. Dr. Holfeld, of Frankfurt, said that in recurrence of growths large doses given within a short interval gave good results, but in cases where recurrence was only potential small doses applied over a longer period were better. Dr. Wieser, of Vienna, spoke on the radiological treatment of mental and nervous diseases in children. Idiotic children, he said, could be improved so much that they became able to attend a special school. Mongols, who, as a rule, learn to speak only at the age of 7 to 8 years, could be made to speak three or four months after the administration of the rays. Endocrine secretion was obviously improved by the rays; the Abderhalden reaction enabled the physician to ascertain which of the glands was affected and the rays were applied accordingly, either to the thyroid, the sexual glands, or the brain. Dr. Straus, of Berlin, read a paper on the radiographic examination of the gall-bladder which, he said, had hitherto not been very successful. The method of administering tetriodphenolphthalein, as recommended by the American physician, Dr. E. A. Graham, had, however, proved very valuable. The compound is discharged into the gall-bladder, and a reliable figure of this organ is seen on radiographic examination in 80 per cent. of cases. Dr. Pribram, of Berlin, said that he preferred intravenous injections of the drug; the pain produced was less and the appearance of the gall bladder was more distinct. Dr. Holthusen reported on the standard measurement of P doses; it is based on the ionisation of the air by the rays. The standard unit is to be called a Rontgen and designated by "R." Dr. R. Glocker, of Stuttgart, reported on international regulations to protect medical men, their assistants, and their patients against the dangerous properties of X rays.

### *Cardiac Complications of Tropical Diseases.*

Prof. M. Couto, of the University of Rio de Janeiro, who lately visited Berlin, read a paper before the Berlin Society for Internal Medicine on Cardiac Troubles in Tropical Diseases. Cardiac symptoms, he said, were often in the foreground in beri-beri, malaria, Chagas's disease, and yellow fever. In beri-beri the first symptom was often tachycardia, followed by angina pectoris and respiratory troubles. These symptoms were due not to affection of the cardiac nerves, but to myocarditis. Prof. Couto has detected the presence of parasites in the coronary arteries and a fatty degeneration of the myocardium. In ankylostomiasis, he said, severe anæmia was caused by intestinal hæmorrhage, the virus hindering the coagulation of the blood. Systolic murmurs were therefore audible in all the cardiac areas and over the jugular vein. In Chagas's disease not only the valves, but also the myocardium were penetrated by cultures of parasites. Yellow fever, which, he said, had now entirely disappeared in Brazil, produced degeneration of the heart muscle.

### *Cure of Paralysis of Intestines.*

Prof. Rosenstein lately reported before the Berlin Surgical Society on the results he has had in the treatment of intestinal paralysis by injections of a nicotine solution into the cœliac ganglion. The injections were performed after the method devised by Kappis for the anæsthesia of the splanchnic nerve. After the injections had been successfully done in animals they were performed in six patients, the result being that the peristaltic movement at once began without any undesirable complication. The method is to be applied, of course, only in cases where other remedies have failed. In the majority of cases of intestinal paralysis hormonal is efficacious.

### *Pneumonia in Measles.*

In a paper recently read before the Berlin Pædiatric Society Dr. Henning stated that in some epidemics of measles the mortality from pneumonia reached 50 per cent. The organisms producing pneumonia were hæmolytic streptococci, which were present in the bronchial secretion of pneumonia patients. These streptococci were evidently responsible for the high mortality of pneumonia in measles, because in cases of pneumonia with measles in which hæmolytic streptococci were absent the mortality was only 15 per cent.

## VIENNA.

(FROM OUR OWN CORRESPONDENT.)

### *Infection of the Urinary Tract and its Treatment.*

AT a recent meeting of the Vienna Gesellschaft der Aerzte Dr. Sternbach discussed the new method of treating infectious conditions of the urinary system by compounds of the salvarsan group. After unsatisfactory trial of various preparations, he said, he had turned to spirocid, which is identical with the stovarsol of the French authors. This compound was discovered by Ehrlich in the course of his researches on salvarsan, but he discontinued its use because he found salvarsan more effective in the treatment of syphilis. During the war, however, Levaditi and Fourneau (Paris) took it up again as a prophylactic against syphilis. As this substance can be given by the mouth, Dr. Sternbach used it extensively, giving small doses—2–3 tablets of 0·25 g. (about 4 gr.)—daily. He cured a case of staphylococcic cystitis of five months' duration within five days, although it had resisted treatment with neosalvarsan and cylotropin, and he cured a case of gonococcal urethrocystitis in six days. Other cases of staphylococcal infection also reacted promptly to spirocid, but coli infections were refractory; in mixed infections the staphylococci were always destroyed. Dr. Sternbach feels justified in asserting that spirocid acts strongly against gonorrhœa and diminishes secretion. Post-gonorrhœal conditions are also greatly benefited and he has never seen any untoward effects when the preparation is given in small doses. In the discussion which followed Prof. M. Oppenheim, who was the first in Germany and Austria to use spirocid in the treatment of syphilis, stated that he had given it in 350 cases of lues where he could not use salvarsan and had had very good results without any unpleasant complications. Other physicians also said that they had seen good results from the use of this remedy in mild gonorrhœa, but considered that an extensive trial of the antigonococcal and antistaphylococcal factor was needed before a definite opinion could be given.

### *Impending Changes in the Medical Faculty.*

Within the next few weeks important decisions will have to be reached by the Board of Education of the Austrian Republic, for no less than four clinical chairs have to be filled. For more than a year there has been no professor of general and experimental pathology, and the leading members of the faculty are of opinion that such a chair, although a necessity some 30 or 40 years ago, is no longer absolutely essential. The students, it is thought, could use the time thus saved for the study of more important and practical subjects, such as dental surgery. There is another vacancy in the Second Ophthalmological Clinic, which has lost its chief by the death of Prof. F. Dimmer; probably his successor will be Prof. Max Salzmann, at present chief of the eye clinic of Graz. He was assistant to the celebrated Prof. Fuchs, and if he is appointed it will be a break in the custom of sending to Germany to find successors to celebrated professors. The two skin clinics will also require new chiefs, as Prof. G. Riehl and Prof. E. Finger will shortly resign on account of age. Prof. Riehl's clinic will probably be taken over by Prof. L. Arzt, now of Innsbruck; some of his competitors are hampered by their creed, for they are Jews, which makes it almost impossible for them to be appointed. As yet it is difficult to forecast who will take Prof. Finger's place, as it is most desirable that those who have to carry on the renowned Vienna school of dermatology should be first-class men.

### *Influx of Foreign Doctors to the University.*

The report of the Board of the University for the winter term again shows that the reputation of this ancient institution has not failed to regain its hold upon the medical men of the old and new world. Amongst the post-graduate students, enlisted for the last winter term—many of them have also enlisted for this summer term already—we find over 230 doctors from the United States and Latin America, 42 from Egypt, 16 from South Africa, 3 from India, and 29 from Japan and China. Of course, European doctors (Russia, Turkey, Rumania, and Poland) are also present in considerable numbers. There is no restriction of admission for foreign doctors as regards post-graduate work; but foreign medical students, who have not yet obtained their diploma, will find it somewhat difficult to gain admission, as the scarcity of dissecting material and laboratory accommodation makes it necessary to give preference in the fundamental teaching facilities to indigenous students, so as to ensure an adequate supply of Austrian doctors.

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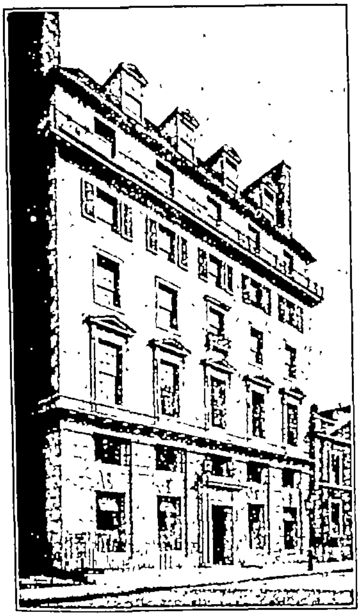
THE Minister of Health has approved the appointment of Mr. E. J. Maude to be Solicitor and Legal Adviser to the Ministry of Health, and of Mr. G. R. Hill to be an Assistant Solicitor. These arrangements take effect on the appointment of Mr. M. L. Gwyer, C.B., solicitor to the Ministry, as King's Proctor and Treasury Solicitor.

# THE COLLEGE OF NURSING.

## OPENING OF THE NEW BUILDING.

FIG. 1.



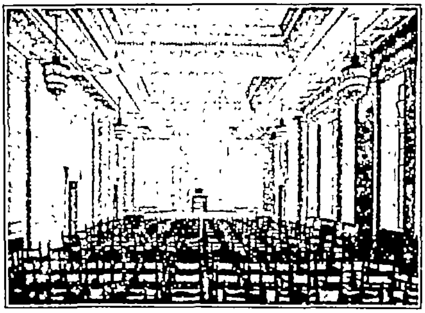
The College of Nursing: The Entrance Front to Henrietta-street.

THE new building, presented by Viscountess Cowdray to the Council of the College of Nursing, was opened on Monday, May 31st, by H.M. the Queen, who was received by Sir Arthur Stanley (chairman of the Council), the Mayor and Mayoress of St. Marylebone, Lady Cowdray, Dame Sarah Swift, R.R.C (President of the College), and Sir Edwin Cooper, the architect.

The building of the College proper gives on Henrietta-street, next door to the house of the Royal Society of Medicine, and is intimately connected behind with the Cowdray Club (entrance to Cavendish-square), a previous gift by the founder designed to further the social side of the College's work. On the ground floor the Nurses' Memorial and Lecture Hall, which occupies the entire width of the building, is, with its excellent acoustics, well adapted for post-graduate teaching. On the first floor the beautiful council room has a committee room on one side of it and on the other the Library with shelves for 5000 books and a replica in bronze of Walker's statue of Florence Nightingale. Above is a cookery demonstration room and a physiological laboratory to be used to instil the principles and methods of simple cookery and the nutritive values of foods into the minds of student-nurses; hospital training schools are invited to avail themselves of these courses. The equipment is completed by a comfortable common room for members and a sitting room for the Students' Association. In the basement a system of filing makes it possible to refer in a few moments to the dossier of any of the College's 25,000 members.

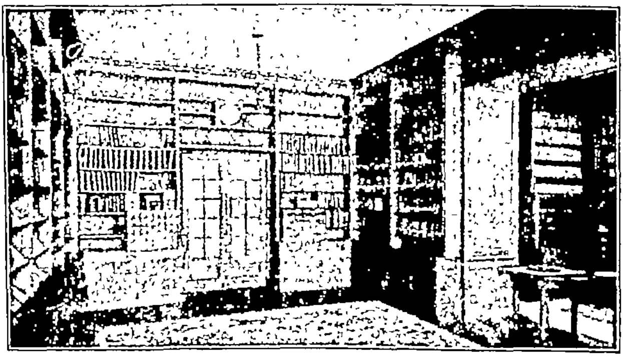
At the opening ceremony Sir Arthur Stanley made a statement on the history and aims of the College. It was in 1915 that he as chairman of the British Red Cross Society, in coöperation with Dame Sarah Swift (Matron-in-Chief B.R.C.S.), Miss Haughton (Matron of Guy's Hospital), and Sir Cooper Perry called upon leaders of the nursing profession to establish an organisation whose policy should be to unite all trained nurses in the endeavour (1) to provide a uniform standard of training, which should be a basis of membership of the College; (2) to improve the quality of the nursing service and the conditions under which nurses work; (3) to assist in securing State

FIG. 2.



The Memorial Hall.

FIG. 3.



The Library.

registration of nurses; (4) to further the advancement of the nursing profession through legislation, post-graduate study, scholarships, and specialised training. In the following year the College was incorporated under the Companies Acts as a company limited by guarantee and not having a share capital. Life membership was then granted for a single payment of £1 1*s.*; later many of the original members voluntarily undertook to pay a yearly subscription of 5*s.*, or a fee of £5, for which more recent members were admitted as life members. At the present time there is an entrance fee of £1 1*s.* and a yearly subscription of 5*s.* The Council of the College is elected by the members; at the present it consists of 27 women, most of them registered nurses, and eight medical men, with Sir Arthur Stanley as Chairman, Sir Cooper Perry as honorary secretary, and Dame Sarah Swift as President. There are now 41 local branches; the London centre, though housed in the College, is in the same position as any other branch, and pays rent to the College for its office accommodation.

One of the Council's first pieces of work was to draft a Bill in 1916 for the State registration of nurses. This Bill was not passed, but in 1919 a Government Bill, supported by the College, was introduced and became law. In 1917 was inaugurated the Nation's Fund for Nurses to endow the College and to provide a benevolent fund for the relief of nurses in sickness and distress. In 1919 a course of training for sister tutors was established in coöperation with King's College for Women. Scholarships for this course and for other courses in public health and midwifery have been granted to the value of over £4000. In 1920 a badge was issued for members of the College, and in that year a quarterly *Bulletin* began to appear. A scheme of grants for disabled nurses received the approval of the Ministry of Labour and gratuities were granted to the Royal Naval Nursing Service, through the intervention of the College. A loan fund was established to assist members professionally, and a rest cottage was opened for use of members and others at Bonchurch. In 1921 post-graduate courses were started in coöperation with Bedford College for Women and the League of Red Cross Societies. In this year exemption was obtained for nurses from the Unemployment Insurance Act, a scheme for accident and sick insurance was arranged, and the superannuation scheme was drawn up which is now being considered by the Hospitals' Association. In 1922 the Cowdray Club was presented to the College by Lady Cowdray and the foundation-stone of the College building laid, In 1923 the public health section of the College was formed and a library of nursing started, with help from the Carnegie U.K. Trust, the use of the library to be free to all nursing students. In 1925 a special department of education was set up to develop post-graduate study. The Ministry of Health recognised the College as an approved centre for the training of health visitors, with whole-time six-months' courses, and a three months' evening "refresher" course for practising health visitors. Free legal advice on professional matters is available for all members of the College, consultations being given by Mr. Archer Ryland, Mr. Cyril Nitch, and Dr. Maurice Cassidy.

The endowment fund of the College has now reached £68,700, mostly raised by nurses themselves, the contribution of the medical profession amounting to about £1000.

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BARTLET CONVALESCENT HOME, FELIXSTOWE.—The late Dr. J. H. Bartlet, who practised for many years in Ipswich, as his father and grandfather had done before him, and died in 1917, left the residue of his estate, amounting, with accumulated interest, to £230,000, for the provision of a convalescent home appurtenant to the Ipswich and East Suffolk Hospital. The building, which has been in course of erection at Felixstowe for nearly three years, has now been opened by Sir Arthur Churchman, M.P. The cost has been £91,000, and the balance of about £1 10,000 is being invested as a maintenance fund. . The building has been partly erected upon the foundations of an old martello tower. It will accommodate 60 patients in four wards.

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# GENERAL MEDICAL COUNCIL.

## PRESIDENT'S ADDRESS.

THE summer session of the General Medical Council was opened on June 1st, Sir DONALD MACALISTER presiding.

After mention of the effects of the strike and the difficulties attendant on travelling and printing which might hamper the Council in its work, the PRESIDENT referred to changes in the Council's personnel since the last session. He spoke warmly of the services of Dr. Richard Caton who for 22 years had represented the University of Liverpool and who died on Jan. 2nd. "Honoured and admired at home and abroad for his civic and academic services, his erudition, and his professional gifts, he was beloved for his sterling goodness and his genial humanity. To his friends, his approval was a thing to be prized; to those who knew only of his labours, his example was a thing to be followed." In succession to Dr. Caton the University of Liverpool had appointed Mr. William Thelwall Thomas, F.R.C.S., whose record assured the Council that it might count on its receiving from him contributions of value to the common good.

The President next paid a tribute to the work of Sir Francis Champneys, who had resigned at the close of the third period of five years for which he had been appointed by the Crown. The Council, he said, had always had important duties to perform in respect of midwifery in the medical curriculum, and during the last 20 years new duties had been added by successive Midwives Acts for England, Scotland, and Ireland. In fulfilling these functions it had been constantly indebted to Sir Francis Champneys for wise and well-informed counsel. His comprehensive knowledge of administrative, educational, and professional conditions, and his experience as chairman of the Central Midwives Board for England, had made his original appointment by the Crown especially welcome and opportune, and his helpfulness to the Council had earned for him its abiding gratitude. Sir John Williams, the immediate predecessor of Sir Francis Champneys as a Crown member, had died a week ago full of years and honours, and in him the University College and the National Library of Wales had lost a distinguished president and a generous benefactor.

A further vacancy had been caused, said the President, by the resignation of Sir Gilbert Barling, Vice-Chancellor of the University of Birmingham, whose loss was the more regrettable because the ground of his withdrawal was impaired health and the urgent need of rest. During the nine years of his membership Sir Gilbert Barling had shown the qualities that had won him high repute in Birmingham and its university as an active promoter and constructive critic of educational progress, and the Council cordially wished him better health and a speedy restoration to active life.

After a reference to the honour of knighthood bestowed on Dr. Robert Bolam, the President continued as follows:—

### *Vacant Seats on the Council.*

"At the time of writing this address I had received no formal intimation of a successor to Sir Gilbert Barling. The intimation may or may not reach us during the session. I gather, on the other hand, that it is highly probable that to-day His Majesty in Council may signify his pleasure respecting a successor to Sir Francis Champneys. To the two new members, when they are appointed, the Council will, I know, empower me to offer the assurance of a fraternal welcome to our body. Partings we may deplore on personal grounds, the severance of old associations gives us each a sense of corporate and individual loss. But it is our happy experience that there never is wanting 'a supply of men duly qualified to serve' the State, and to safeguard and further the public health by assuming the duties and responsibilities laid by law upon the Council. These duties and responsibilities are many and diverse; it is expedient that the qualifications of the several members should be diverse, and as far as possible complementary. Our statutory constitution provides more fully than many are aware for this wholesome variety of composition. From the beginning nine members only must be registered practitioners, and now only 15 out of 38 need possess a medical qualification. The bodies charged with the *discipline of other professions, such as the law*, have not yet been entrusted with 'this freedom' to receive non-professional members, at the discretion of the appointing authorities.

"In the Council 'diversities of gifts,' including gifts other than professional or scientific, 'diversities of ministrations,' even 'diversities of tongues,' have during my long experience proved to be of real value for our judicial and educational work. The resources of the Council have again and again been enriched by the presence among us of men who were great public *servants, Members of Parliament, municipal* and academic leaders, humane scholars, and the like, recognised outside medicine as eminent in non-professional fields. The Dental Board has profited in many ways by the fact that the Crown appointed as its chairman a Privy Councillor having the parliamentary, administrative, and educational experience of Mr. Acland. Were His Majesty pleased to nominate to our body a member of his Council, whose experience was in like manner complementary to our own, the Council would be similarly advantaged in more than one respect. It would have, in particular, cause to welcome the nomination as marking its close connexion with the Privy Council, to whose official direction we are by statute committed."

*Appointment of a Non-medical Crown Nominee.*

The President then announced that the Lord President of H.M. Privy Council had informed him that afternoon that His Majesty had been pleased to nominate as his representative on the Council, in succession to Sir Francis Champneys resigned, Lieut.-Commander the Right Hon. Edward Hilton Young, D.S.O., D.S.C., R.N., M.P. He referred to the many gifts and attainments of the new representative, who was a man of law and letters, and who had distinguished himself during the war by his gallantry as a naval officer, adding that he hoped that he would attend the Council's *session on the following day.*

*Registration in the Irish Free State.*

"The Privy Council has informed us," the President continued, "that on Feb. 10th the Medical Act, 1926, was passed by the Irish Free State. It continues the Medical Act of 1925 until August 21st, 1926. The new Act gives power to the Executive Council of the Free State to continue its operation for successive periods of one month, until Feb. 21st, 1927, but no further. A despatch from the Governor-General to the Secretary of State for Dominion Affairs intimates that the question of a permanent arrangement in the matter of Medical Registration is engaging the attention of the Free State Government, and a later despatch announces that Ministers hope to be in a position at an early date to ask for a conference with the British Government, for the purpose of discussing a draft Bill on the question. The relations of Southern Ireland to the General Medical Council will therefore remain unchanged until August 21st at least, and medical registration will proceed as hitherto. We have as yet no official knowledge of what permanent arrangement may be proposed by the Free State.

*Reciprocity with Canada.*

"The Privy Council has also communicated to the Executive Committee a telegram from the Governor-General of Canada, in which he says that, at a conference between the *Saskatchewan* Government and the Provincial Medical Council, it has been decided that the recently enacted provincial law shall not be changed. The effect of this law is formally to exclude the registered medical practitioners of the United Kingdom from the privilege of practising in the Province. Reciprocity being thus abrogated by one of the parties, the Order in Council of June 10th, 1915, applying Part II. of the Medical Act, 1886, to Saskatchewan, was rescinded by His Majesty in Council on April 30th. The provincial qualification is thus no longer registrable in this country.

"The *Governor-General* ' *has also informed* the Secretary of State for Dominion Affairs that *New Brunswick* has now finally adopted a position similar to that of Saskatchewan. The Provincial Medical Council informed us in May of last year that it felt that 'the profession must be protected,' and with this object in view it had made an alteration in its Regulations. The alteration excludes from local medical practice practitioners from Provinces of Canada outside New Brunswick who are registered in the United Kingdom. The existing arrangement, however, continues to give practitioners from New Brunswick registered here the privilege of practising in other Provinces of Canada, as well as throughout the Empire. As reciprocity is thus in effect at an end in the Province, the Executive Committee have felt it their duty to represent the facts to the Lord President, with a view to the rescission of the Order in Council of Oct. 14th, 1913.

"Correspondence with other provinces and with the Medical Council of Canada suggests that, until inter-provincial differences of standard and policy have been overcome, and an effective basis for Dominion licensing as distinguished from Dominion examination has been found, no completely satisfactory arrangement for establishing reciprocal relations between this country and Canada as a Dominion will be practicable.

*Indian Examinations.*

"The expected report of Colonel Needham, the Official Inspector of Medical Education in India, on the professional examinations for the degree of M.B. of the University of Calcutta, was duly received and published with the minutes of the meeting of the Executive Committee on Feb. 22nd, 1926. Having carefully considered the report and having had the great advantage of an interview with Colonel Needham, who is at present on leave, the Executive Committee is satisfied that the M.B. diploma of this University does not yet fulfil the conditions for recognition laid down in Section 13 of the Medical Act, 1886. It does not, as it stands, furnish, particularly in respect of midwifery, 'a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of medicine, surgery, and midwifery' in this country. The Committee is accordingly unable for the time being to propose any change in the existing position of the Calcutta degree. With regard to the question of continuing the present recognition of other Indian degrees, which is still subject to satisfactory reports of progress from the Official Inspector, the Secretary of State for India has informed us that he cordially supports the proposal, originally made by Calcutta, that Sir Norman Walker should pay a second visit to India as a member of the General Medical Council; and further that the Government of India would regard such a visit with favour. Sir Norman *has informed* the Executive Committee that, should he be invited by the Indian Government authorities to pay a second visit to India, he would be prepared, under suitable conditions, to accompany to India Colonel Needham, who is the Official Inspector of Medical Education appointed by the Indian Government and approved by the Council, and to make a special report on his personal observations for the information of the Secretary of State and of the Council. As the existing recognition of other Indian degrees is conditional on the Official Inspector's satisfactory report of progress *in the present year*, an official tour of inspection *falls to be made during the* next winter session. It is obviously convenient that Sir Norman should carry out his visitation then. The members of the Executive Committee gratefully recognise their colleague's readiness to undertake a trying journey in the interest of Indian medical education. They feel sure that, if satisfactory conditions can be arranged for the proposed visitation, in combination with the official inspection of Indian colleges and universities, the opportunities thereby afforded for direct conference with administrative, academic, and professional authorities will once more prove to be of substantial value in removing difficulties and accelerating progress. Moreover, new universities and colleges, including faculties of medicine, are in process of organisation at more than one centre within the Indian Empire. From the correspondence we have already had with these it is clear that they will welcome the opportunity of personal consultation with a member of the Council on the questions of curriculum and examination with which they are occupied.

"A communication has just been received by the Executive Committee from the Secretary of State for India in Council, stating that the Government of India have now agreed to the proposal that Sir Norman should make a further visitation, and that they have invited Colonel Needham to accompany him.

### *British Pharmacopœia.*

"With the approval of the Council, the Pharmacopœia Committee invited delegates from a number of medical, pharmaceutical, and scientific bodies to meet it in conference on certain general questions arising out of the proposed revision of the British Pharmacopœia, 1914. The conference was duly held on Feb. 23rd, and was attended by the members of the Committee and by 23 delegates from 12 bodies interested. To these bodies, and to their delegates, the Committee expresses its obligations for their courtesy in meeting it and stating their views. A number of important suggestions and criticisms were offered by the delegates, bearing chiefly on the scope and method of the proposed revision, on the organisation and powers of expert committees, and on the adaptation of the Pharmacopœia to Indian and Dominion requirements. The Committee, at a subsequent meeting, considered these suggestions and criticisms, together with certain larger questions of pharmacopœial policy, national and imperial, arising out of recent legislation and recent international agreements, including those concerning therapeutic substances, potent remedies, and dangerous drugs. The Committee came to the conclusion that, before making a definite reply on the particular points brought before it at the conference, the general interest required that an authoritative inquiry should be held by a suitable committee, officially empowered to call for information and to examine witnesses on the whole subject of pharmacopœial revision in this country and overseas. The recommendations of such a committee, founded on a comprehensive survey of the ascertained facts, would be of great value from the public, the professional, and the scientific point of view; and would indicate what changes (if any) in the general organisation and method of revision are desirable. A resolution embodying this conclusion of the Pharmacopœia Committee, and asking the Council to take steps towards the institution of such a committee of inquiry, will be brought before you during the session."

### *The Case of Mr. F. W. Axham, Deceased.*

"The Council," said the President, "will remember that towards the end of our session in November, a request was received from Mr. Frederick William Axham that his name, which had been removed from the Register on May 24th, 1911, as the result of a judicial inquiry, might now be restored. Two Royal Colleges, acting independently of each other and of the Council, had subsequently withdrawn from him their diplomas. The Council, which is always ready to entertain requests for restoration, has provided a regular procedure for their judicial consideration. This procedure, which is uniform for all that it may be just to all, is fully set forth in its published Standing Orders. The procedure has been made known to Mr. Axham; but as he was unable to make the required declaration that he held any qualification entitling him to be registered, the Council was legally precluded from dealing with his informal request. It was ex gratia adjourned until this session, however, in case in the interval he should be able to procure the restoration of one or both of his registrable diplomas. The Royal College of Surgeons of England, whose jurisdiction over its members is entirely distinct and independent, on Dec. 10th, 1925, and again on Jan. 14th, 1926, decided that his registrable membership should not be restored. The Royal College of Physicians of Edinburgh, whose jurisdiction over its licentiates is equally distinct and independent, resolved on Jan. 19th, 1926, to restore his registrable licence, on proof submitted that he had 'abstained for the last five years from the practices that led to his suspension and will not resume them.' If Mr. Axham had then presented an application for registration, with a statutory declaration, which he could not furnish in November, that he actually held a medical qualification, and setting forth his recent occupation and intentions as to practice, the application, along with any objection to his restoration that might be submitted by the Royal College of Surgeons, would have been considered by the Executive Committee at its regular meeting on Feb. 22nd, 1926. But at that meeting no such application and statutory declaration from Mr. Axham were forthcoming. The Executive Committee, which has no power to suspend the Council's Standing Orders, were thus unable to consider what recommendation they should make to the Council on the case, and the matter perforce stood adjourned till their next meeting on May 31st. The first application from Mr. Axham which either the Council or the Executive Council could lawfully entertain, with a view to a judicial decision, was, in fact, not lodged until March 4th, 1926, when neither body was in session. The unfortunate death of Mr. Axham, early in April, has to our regret caused the application to be withdrawn from our agenda paper.

"Neither the Committee, as the body charged with preliminary inquiry in such cases, nor the Council acting as a statutory tribunal, has thus had an opportunity of dealing with his application on its merits, of considering any objections to his restoration that might have been submitted by the Royal College of Surgeons or others, or of pronouncing judgment, favourable or unfavourable, upon Mr. Axham's case. Had he survived, the Council would at this session be called upon to exercise its judicial functions in his case, without fear or favour, affection or ill-will. Yet some misguided persons, for selfish ends unconnected with the applicant's interest, thought to sway the tribunal to hasty and partial action by means of popular clamour and denunciation directed against the Council and its members. They abused the complaisance of the press, and misled the uninformed public regarding the facts. And by misrepresentation they sought to excite prejudice against the provisions of the law, expressly enacted to ensure 'that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners.' To these persons that distinction was no doubt professionally inconvenient, and to disparage the Council, whose statutory function is to maintain it, might lead to the easier evasion of the law. The attempt to influence the Council's judgment by threatenings against its constitution, if it did not yield to interested or ignorant demands, anticipated by a month or two the lawless attempt on a larger scale against the national constitution itself. The Council anticipated the firm response of the Government to the much graver attack on law and order. From no single member of the Council did I receive a hint that it should do other than bear the attack with equanimity, and maintain meanwhile the impartiality of its position as a judicial body. No requisition for the summoning of a special meeting of the Council reached me. I am deeply grateful for the unanimous support of the members of the Council in my refusal, as President, to summon it on my own responsibility. That would have been to take action which must tend to bias their opinion, in one direction or another, on a matter submitted for their independent judgment. Two different views were tenable on the merits of Mr. Axham's case, and were, in fact, held by important professional bodies To suggest the preliminary suspension of the Standing Orders, at the instance of interested parties favouring one view, would have been a departure from impartiality on the part of your President. That departure could only prejudice the good name of the Council itself, and so advance the designs of those who sought for reasons of their own to discredit it.

"There is reason to think that the factitious agitation against the Council as an independent tribunal, instigated by unqualified persons under cover of Mr. Axham's name, but joined in by many who, ignorant of the facts, were moved by laudable compassion for his age and infirmities, has led indirectly to a better understanding of the Council's duties in relation to the protection of the public, and to the training and discipline of the medical profession Its stability as a judicial body, not to be swayed from an even course by partisan abuse or threat, has been vindicated anew; as its judicial procedure has oftentimes been vindicated by the High Court of Justice"

Sir Donald MacAlister concluded his address with the statement that several cases of professional discipline, adjourned or freshly presented, would be submitted for inquiry during the week "You will," he said "as always hear them judicially, and decide them on the evidence brought before you, uninfluenced by any outside opinions conveyed to you through the press or otherwise"

A vote of thanks to the President was proposed by Sir NORMAN WALKER, seconded by Sir GEORGE NEWMAN, and carried with acclamation

The Registrar read a communication from the Lord President of the Privy Council, acknowledging the letter of sympathy sent by the Council on the death of Queen Alexandra The Council then proceeded to consider a penal case reported by the Dental Board, and received reports from the Dental Education and Examination Committee The Executive and Dental Executive Committees and the Penal Cases Committee were elected, and membership of other committees was approved The Council then considered four penal cases in which judgment had been postponed from last Summer Session.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 22ND, 1926

*Notifications.*—The following cases of infectious disease were notified during the week: Small pox, 102 (last week 101); scarlet fever, 1311, diphtheria, 511; enteric fever, 27; pneumonia, 610, puerperal fever, 65; cerebro-spinal fever, 7; acute poliomyelitis, 8, encephalitis lethargica, 37; dysentery 8, ophthalmia neonatorum, 73 There was no case of cholera plague, or typhus fever notified during the week.

In London itself there was notified no case of small pox, scarlet fever, 260; diphtheria, 211; enteric fever, 6; pneumonia, 102, puerperal fever, 6; cerebro-spinal fever, 1; encephalitis lethargica, 8, and ophthalmia neonatorum, 15

*Deaths.*—In the aggregate of great towns, including London, there were 3 (1) deaths from enteric fever, 50 (10) from measles, 2 (2) from scarlet fever, 35 (8) from whooping cough, 32 (8) from diphtheria, 13 (10) from diarrhœa and enteritis under 2 years, and 111 (11) from influenza The figures in parentheses are those for London itself

(The Registrar-General's weekly return has not yet been printed, and we are indebted to the Ministry of Health for these figures)

PUBLIC HEALTH LABORATORY AT MADRAS.—The Madras Corporation has accepted the recommendation of its Health Committee for the establishment of a public health laboratory for the analysis and examination of foodstuffs.

# Correspondence.

"Audi alteram partem."

## THE PRECANCEROUS STATE

*To the Editor of* THE LANCET.

SIR,—Allow me to thank you for your perfectly clear and able résumé of my latest paper upon the early epithelial stages of the breast in carcinoma of that gland. Your leading article last week raises the most important point that carcinoma may arise "without being preceded by any of these hyperplastic changes." I quite agree that there is such a state as acute carcinoma—that is to say, one that supervenes very early after the application of tar to the skin. On the other hand, it is a very interesting and an illuminating fact that as a rule tar carcinoma supervenes with great regularity at the end of about six months. During that period various forms of epithelial hyperplasia are observed, as Dr. J. A. Murray has pointed out There is even a stage in which the epithelial hyperplasia is capable of being transplanted, and in its new situation it grows as carcinoma, although the epithelial cells were confined within normal boundaries when Dr. Murray placed them in new surroundings When confined within normal boundaries this state of epithelial hyperplasia cannot be stated to be one of carcinoma, yet the epithelial cells were certainly malignant. Another interesting feature concerning the regularity with which the intervention of carcinoma occurs at the end of six months is this: Supposing Gye be right, that carcinoma be due to a virus and a specific factor, can it be assumed that either one or the other, or both, can appear suddenly with such great regularity? The regularity of the incidence of tar carcinoma at the end of six months appears to me to indicate that the process is a long one and takes (in the mouse) about six months to mature. Proof is wanting as to whether or no that even in acute carcinoma there are any preceding epithelial hyperplastic stages in which the process is invariably rapid. I believe that such is the state of affairs There must be a stage in carcinoma when epithelial cells are malignant and confined within normal boundaries. It must be so, even should a state of carcinoma be the result of the first division of only one cell into two cells The cell from which the invading cell be derived must be a malignant one.

I am, Sir, yours faithfully,

G LENTHAL CHEATLE.

Harley-street, W, May 28th, 1926

*To the Editor of* THE LANCET.

SIR,—In reference to the leading article in your last issue on the above subject may I draw your attention to the important work of Goodpasture[1] and of L. W. Smith[2] on senescence in dogs. They found precancerous changes of common occurrence, not only in the breast and prostate, but in the thyroid, testis, and other organs My own examination[3] of the chief organs of 100 aged men and women showed that changes of a similar nature are often present in human senility. Such widespread prevalence suggests they are natural features of aged tissues It seems highly probable that they are no more than the penultimate stage of normal gland degeneration. After the gland has reached its highest progressive development, the regressive changes which then set in are apparently reversive in character. Just before the final stage of molecular disintegration there is a stage in which proliferation is the dominant feature. One after the other the higher qualities of the cell have gone in an order the reverse of their acquisition, until hardly anything is left but the basic function of reproduction. Should such reduced, embryonoid cells be subjected to the action of suitable stimuli in sufficient intensity or duration, their more or less dormant reproductive faculties are awakened, and in this way cancers are born. There is abundance of evidence that this is the correct interpretation of these precancers and of the way in which they explode into cancers under the stimulus of heat, of X rays, of blows, of tar, or other irritants.

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[1] Jour Med. Res., 1915 xxxiii., 155

[2] Ibid, 1919, xl. 51

[3] Tumours and Cancers, 1926, p 200.

I am, Sir, yours faithfully,

Reading, May 31st, 1926. H. GILFORD.

## X RAY TREATMENT OF CANCER.

*To the Editor of* THE LANCET.

SIR,—I regret to find myself in disagreement with about 27 of the statements (original or quoted) of your Ukrainian correspondent, Dr. Podkaminsky, in your last issue. I should at least wish to qualify them materially in any adequate discussion of the issues he raises. The only contribution of his that I can trace in the *Index Medicus* since 1920 (and in the Quarterly Cumulative Index) is a preliminary note on "Gastro-enterostomy with Prophylactic Vagotomy" in last year's *Zeitsch. für Chirurgie* from Prof. Trinkler's surgical clinic at Kharkov. So far as one can judge, his letter is his first contribution to radiological literature. One would be glad indeed to welcome his entrance to the field were his energy, vivacity and remarkable knowledge of English equalled by his mastery of the subject; but they are not. Instead, we are treated to a forensic attack from one whose position in administrative charge of a Rontgen institute would suggest his appearance rather as a defending counsel; and the issues, conflicting as they were, are now more confused as a result of his having mounted the rostrum in your columns.

1. The bases of radiation treatment of cancer are physical, biological, pathological, technical, and clinical. No more than practical physics stands or falls with the Newtonian "laws" does radiation treatment stand or fall with the application or not to it of such theories as the psychological Arndt-Schulz "law," or the Bergonié-Tribondeau "law." "Laws" in science, philosophically speaking, are no more than formulæ which give an account of the main trend of observed phenomena; at any time fresh observations or experiments may lead to their qualification, or even rejection, in favour of more accurate formulæ expressing "events."

2. Few would agree that ionisation measurements have "no advantage over the older pastille and photographic methods"; the latter only measures about 1 per cent. of the incident energy—what possibilities for error are there not here, apart from the characteristic silver radiation error at critical wave-lengths? Compared with ionisation the pastille and photographic methods are obsolete for all short-wave therapy (*x* or *y*).

3. The question of a possible stimulating dose is by no means settled yet, biologically or clinically. I have seen and published notes of four cancer patients (two treated with X rays, two with radium) in whom it seemed justifiable to infer stimulation effects.

4. "Ulman thinks . . . that basal-cell carcinomata hardly ever relapse . . . however the dose may be varied." The opposite is unfortunately the experience of most radiologists at least until their dose-technique is perfected.

5. As to the metaphase cell-division theory of sensitiveness, it would seem illusory to attempt to radiate so as to catch every cell when at this phase. Experiences with some cancers show it is quite unnecessary to attempt treatment on these lines. For example, Kelly's one- or two-minute treatment of rodent ulcer with massive radium doses, and the often successful treatment of lymphosarcoma and testicular recurrences, to name some types that have responded well with either intensive (in time) or fractional methods. Long-continued radiation may be best for squamous-celled carcinoma, but it is a mere supposition that thereby the cells are caught effectively or only in a special period of cell-division.

6. No responsible medical man, whatever treatment he adopts, promises "a complete cure" in cancer (apart from early rodent ulcer). Recent American statistics show a very low percentage (10 per cent. or less) of permanent cure even after breast cancer surgery. How difficult for *any* treatment must be prostatic cancer for example, where early invasion is so common (23 per cent. of patients at first appearance showing bone metastasis (Bumpus, Mayo Clinic); in 2 per cent. only when first seen confined to the prostate (Barringer)). The possibility of distant metastases and late recurrences can justify no claims for permanent "cure" by any known methods of treatment.

These are only a few of the points in Dr. Podkaminsky's letter that are open to criticism. Far from being sunk in "deep pessimism," as he thinks, workers with X rays and radium are perhaps the most hopeful of all those who are treating cancer by recognised methods. Think of the last 20 years' advance in the hopefulness of outlook for the cancer patient who now has radiation as an aid or alternative to surgery! In rodent ulcer, many sarcomas, testicular recurrences, cervix cancer, and breast cancer, the advance is astounding if we think of the problem in a wide way. What may not the next 20 years bring? Radiologists have much to learn yet, but also much cause for solid satisfaction—certainly nothing to justify pessimism in those abreast of the subject, who also realise the protean and baffling nature of the diseases they are attacking. That we cannot cure advanced or disseminated cancer is no cause for depression—no one can show better results than we do in inoperable cases; the same may be true in time of operable ones, though at present early operation, where possible, seems preferable, except perhaps in rodent ulcer, sarcoma, and cervix cancer.

In conclusion, may I say that it seems to me a pity that Dr. Morton has attempted to focus attention on what he terms the "Erlangen system"? There is no such published method of general X ray therapy, only monographs by Wintz on his methods of treating uterine and breast cancer. Even here other methods are, I believe, more widely used; and in surgical Rontgen therapy Holfelder's work seems to me to be the most advanced "system" up to the present. I am at one with Dr. Morton in his plea for a wider study in England of the possibilities of radiation treatment, but such investigations should be on a much wider technical basis than the so-called Erlangen (or any other) "system." And the necessary preparatory discipline and safeguards in the conduct of such extended studies would be difficult to provide. Such studies should include alternative methods of X ray and radium therapy, apart and combined, and in close association with surgical, pathological, biochemical, and physical work. Some centres are already advancing along these lines. The main difficulty is to provide them with funds to epuip them with the necessary space, staff, and apparatus.

In my experience there is little or no lack of clinical material available; a great deal has to be done yet before we could reasonably expect early operable cases to be sent to us in numbers, as Dr. Morton seems to wish. A melioristic outlook seems to me justifiable—somewhere between Dr. Morton's optimism and Dr. Podkaminsky's pessimism.

*I am, Sir, yours faithfully,*

J. H. DOUGLAS WEBSTER.

Chandos-street, Cavendish-square, W., May 29th, 1926.

*To the Editor of* THE LANCET.

SIR,—The letter under the signature of Dr. Podkaminsky, of Kharkow, dealing with the X ray treatment of cancer, though written by a radiologist as if in authority, will, I think, give an entirely false impression on those who have no special knowledge of the subject. It deals with opinions and theories rather than facts. It mentions several laws, for instance, the law of Arndt, Schutz, and the law of Bergonié and Tribandeau as if they were of importance like the laws of the conservation of energy or of gravity. It refers to "the index of karyokinetic activity," "the irritation dose," "the carcinoma dose" as if they were terms based on some profound truths and in common use. On the other hand, the facts of radiology ascertained by experimental and clinical research are hardly mentioned. Nevertheless, dealing thus not with facts but with opinions and theories which are of little or no interest to the radiologist, he finally says "I have now outlined the causes which account for the deep pessimism which is general among rontgen therapists." It is true that the science of radiology advances slowly because of the very small amount of research work which is carried out. If there is any pessimism it is because there are so few facts available and not because some obscure laws and theories and seldom used terms have been found wanting.

I am, Sir, yours faithfully,
J. C. MOTTRAM.
Research Department, Radium Institute,
May 31st, 1926. London.

*To the Editor of* THE LANCET

SIR,—In his reply to my letter in THE LANCET of May 1st, Dr. Reginald Morton maintains his view that the hard X rays have received no careful trial in the treatment of cancer in this country. I need go no further than my own experience to answer his question "Where, when, and under what conditions the trial was made." I submitted 48 cases of cancer of the prostate to this treatment and kept careful record of the results obtained. These cases were not selected in any way, they were consecutive cases from my private practice and were sent to the radiologist as they came to me, without operation. The treatment in these cases was carried out by 12 radiologists, seven of whom work in London; one case was treated at Erlangen. Dr. Morton treated ten of these cases. That was a definite series of cases of a form of cancer readily recognised and easily accessible and thus capable of being accurately watched.

The results of the hard rays in these cases were given in the Ninth Silvanus Thompson Lecture at the Rontgen Society, and were open to Dr. Morton had he cared to attend. They bear out my contention that the claims that have been made for the Erlangen technique are extravagant. In his first letter Dr. Morton stated that treatment by the Erlangen technique was without any of the risks of operation. He now admits that risks do attend the treatment, but he suggests that they do not occur in his own experience and that they are due to carelessness, incompetence, faulty technique, and the treatment of unsuitable cases. I must leave the question of technique to Dr. Morton's radiological colleagues. So far as my own cases are concerned, I can assure Dr. Morton that his colleagues have nothing to learn from him in regard to care and competence. Further, I may say, that in treating my cases Dr. Morton has not been immune from general or local reaction.

Dr. Morton states that he was not thinking of my cases of malignant prostate when he made his statements. I can well believe it. But there was, I think, no harm in informing him of the late results. He further states that he "did not consider any one of them likely to be cured by any method at present known to us." This is the first time I have heard of this view, and I confess that, had I known of it at the time, I should not have advised the patients to undergo the expense and risk of the treatment. The cases are represented as being advanced cases with spread to the bladder and lymphatic glands and with cystitis, and it is further objected that the average age was 62. This account of the cases is quite misleading. I have already stated that with two exceptions they were cases in the early stage of the disease with circumscribed growths. In two cases there was sciatica which suggested a lymphatic deposit but no enlarged glands could be found. The patients were in good and even robust health. The age of 62 is rather under the average age for cancer of the prostate. Does Dr. Morton wish us to understand that the Erlangen technique is contraindicated in malignant disease of the prostate on this account?"

I see no reason to change my view that the claims that have been made in the past for the treatment of cancer by the Erlangen technique have, in my experience, proved extravagant.

I am, Sir, yours faithfully,
Harley-street W., May 31st. JOHN THOMSON WALKER.

## HOUR GLASS STOMACH

*To the Editor of* THE LANCET

SIR,—Mr. Seton Pringle, in his interesting article published in THE LANCET of May 29th, recommends partial gastrectomy as the operation of choice for hour-glass stomach. On theoretical grounds he suggests that the very much easier operation of gastro-gastrostomy would prove to be unsatisfactory. During the last 10 years, however, numerous cases of hour-glass stomach have come under my care and have been subsequently operated upon by different surgeons and by different methods, and I have no hesitation in saying that gastro gastrostomy has given the best results. It has been performed in at least 20 cases, the majority by Mr. R. P. Rowlands. There has been no mortality, and so far as I know recovery has been complete and permanent in every case, although many of the patients were elderly, emaciated women, who had suffered severely for 10, 20, or even 30 years. The operation is, in my opinion, the most satisfactory of all gastric operations; it restores the normal physiology of the stomach at the same time as it promotes the healing of the ulcer by side-tracking the chyme, and there is no danger of jejunal ulcer—an ever present risk after gastro-enterostomy.

I am, Sir, yours faithfully,
ARTHUR F. HURST.
New Lodge Clinic, Windsor Forest, May 30th 1926.

## "TOXIC (SUBDURAL) MENINGEAL HÆMORRHAGE"

*To the Editor of* THE LANCET

SIR,—I was much interested in the account of meningeal hæmorrhage published by Dr. A. G. Banks and Dr. A. M. N. Pringle in your issue of May 22nd. But the title of their paper, Toxic (Subdural) Meningeal Hæmorrhage, is open to question. The appearance of blood in the cerebro-spinal fluid indicates an effusion into the *subarachnoid* space, and in cases of this kind which end fatally the brain is usually found to be enveloped in a thin sheet of blood contained within the arachnoid membrane, the subdural space being free.

I would further quarrel with the use of the word "toxic." In the first of the three cases reported there is, perhaps, some justification for it, though the evidence of subarachnoid hæmorrhage is incomplete. The fluid withdrawn is said to have been "practically pure blood" and "no cerebro-spinal fluid could be separated." This might have been due to accidental puncture of a vein. In true subarachnoid hæmorrhage, as Froin pointed out in 1904, the fluid obtained from lumbar puncture is a mixture of cerebro-spinal fluid with red cells. If it is allowed to stand the blood cells settle at the bottom of the tube, leaving a clear supernatant fluid tinged yellow or brown with hæmoglobin derivatives. In the other two cases, in which a homogeneous mixture of blood and cerebro-spinal fluid was observed, the onset of the illness appears to have been sudden, and the symptoms of constitutional disturbance attributable to the hæmorrhage. A mild febrile reaction is a somewhat characteristic feature of the condition, and together with the signs of meningeal irritation frequently leads to the erroneous diagnosis of meningitis.

I have stated elsewhere my reasons for suspecting that in a large proportion of these cases of spontaneous subarachnoid hæmorrhage in young and healthy people the cause is leakage from a "congenital" aneurysm at the base of the brain. As Dr. Banks and Dr. Pringle suggest these cases are commoner than is generally supposed. I was able to collect 127 instances in 1924.[1] Since then I have read of several others and have myself encountered six. Three of these ended fatally. In two of them a post mortem examination was obtained and revealed a ruptured aneurysm as the cause.—I am, Sir, yours faithfully,

Wimpole-street W., May 2 th. C. P. SYMONDS.

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[1] Symonds C. P.: Quart. Jour. Med., 1924, xviii., 93.

# Obituary.

## SIR JOHN WILLIAMS, BART., G.C.V.O., M.D., F.R.C.P. LOND.

The name of Sir John Williams, who died on May 24th at Aberystwyth, may be unfamiliar to some of the younger generation because he spent many years in retirement, but it is the name of a man who was deservedly famous in his time and who did much to influence the practice of gynæcology and obstetrics. His life was a notable example of the weight of character in a career.

Sir John Williams.

*(We are indebted to the "South Wales News" for this photo by Culliford, Aberystwyth.)*

Born in November, 1840, John Williams came of good yeoman stock. His father, David Williams, carried on a farm in Carmarthenshire, but was also the ordained minister of a Congregational Church; his mother, who was left a widow when John, her third son, was only 2 years old, was a woman of exceptional powers, and brought up her five children with courage and discernment. As a boy, John went to the village school two or three miles from his home. Then he was sent to the Normal College at Swansea, where he took a preliminary course in science and served a short apprenticeship with a medical practitioner. Thence he went to London and entered University College in 1861. After qualifying as L.S.A. in 1865, he held house appointments at the Brompton Hospital for Consumption and at the Children's Hospital, Great Ormond-street, and when he had graduated as M.B. and otherwise equipped himself for medical work went back to Swansea where he settled down as a general practitioner. In 1872 he married Mary, daughter of Richard Hughes, of Ynistawe, who died in 1915. Her mother is still living at the age of 93.

It was in 1873 that Williams returned to London at the instigation of a physician who was visiting Swansea and who insisted that he should apply for the vacant post of assistant obstetric physician at University College Hospital. Somewhat doubtfully he consented, and was immediately appointed. The next 20 years were given up entirely to professional work. Although at first Williams was not very successful in private work it was obvious to his colleagues that his ability was outstanding, and the help of Sir William Jenner and Dr. Matthews Duncan soon increased his practice. He quickly gathered influence and it was not long before his writing and teaching made him a power in the profession. In 1883 he became obstetric physician jointly with Dr. Graily Hewitt, and in 1887 professor of obstetric medicine at University College. Appointment to the Court of Queen Victoria followed, "and his appointment," writes Sir Francis Champneys, "was a sign at which men of good will rejoiced. In this position he was what he always had been, a man who left nothing to chance and who was the soul of honour and uprightness. As a consequence he was absolutely trusted by Her Majesty, who was a shrewd judge of character. He was for some time the undoubted head of his branch." Honours followed in due course. On the birth of the Prince of Wales in 1894 John Williams was created a baronet by Queen Victoria; in 1902 he was made a K.C.V.O. by King Edward, and in 1911, when his work for the advancement of Welsh learning had made him distinguished in another sphere, King George promoted him to the G.C.V.O. The King of Denmark gave him the Grand Cross of the Order of the Dannebrog; the Universities of Edinburgh, Aberdeen, and Glasgow made him LL.D.; he became D.Sc. of the University of Wales, Fellow of University College, and hon. Fellow of the Royal Society of Medicine. In 1903, whilst still in the midst of successful practice, he retired to a country house he had bought at Llanstephan in Carmarthenshire and devoted himself to setting up the Welsh National Library which had been his ideal and became his achievement. His services as a patriot were recognised by his appointment as President of the University College of Wales in 1913 and later by his being made first President of the National Library—"the first in personal effort for its establishment, the first in personal sacrifice for its good, and the first in the importance of his contribution to its treasures."

The renascence of British obstetrics and gynæcology may be said to have begun with the coming of Dr. Matthews Duncan to London. Duncan found a London in which callipers for measuring the pelvis were practically unknown, and where gynæcologists directed their chief attention to such conditions as cervical erosion, minor displacement of the uterus, and the repair of the cervix. Some of the younger men were dissatisfied with the state of affairs, but little was done by way of remedy until Duncan crystallised the discontent around him. Of the band which worked with Duncan, Williams was, perhaps, the senior member, and his power was shown by the number of his pupils who obtained teaching appointments in the London schools. Williams was a skilful operator, which made his somewhat conservative surgery the more impressive. He had no sympathy with the widespread custom of using artificial supports to correct any and every pelvic displacement. The discussion of his paper on the Mechanical Action of Pessaries at the Obstetrical Society in 1876 revealed the conflict of principles on which the practice was based, and his study of the circulation in the uterus given to the same society in 1885 was the chief influence in freeing women from the unnecessary interference to which they were subjected in the name of uterine displacement. His other papers were equally valuable, since he never wrote for the sake of writing. In 1877 he produced a treatise on the Pathology and Treatment of Membranous Dysmenorrhœa, in which again, by his genuinely critical approach, he rendered a service to clear thinking and thus to therapeutics. A second paper on dysmenorrhœa appeared in 1882, and the views he put forward then have since been largely accepted. Five years later he became President of the Obstetrical Society, in the Transactions of which his papers are mostly to be found. Whether great or small they are sound in method and always carried weight, and he was a successful President during his two years of office. Later he became the first chairman of the *Journal of Obstetrics and Gynæcology of the British Empire,* and as a member of the General Medical Council from 1901–11 was responsible for important reforms in the teaching of gynæcology and midwifery.

The last part of Sir John Williams's life was devoted mainly to Wales and the Welsh Colleges. It is said that the sight of John Hunter's collections first stimulated him to be a collector, but however that may be he had already begun to buy Welsh books and manuscripts when he was in practice in Swansea At that time hardly anyone cared for the national literature, and when, about the year 1880, he began to collect in earnest, he had few competitors in the field. Afterwards, when he became wealthy, he never paused to consider prices, but purchased everything available of which a copy was not already in his library Thus he absorbed many great collections, and his own became almost unrivalled. This interest in collecting brought him, in the later 'nineties of last century, into touch with the Welsh Colleges, for he had determined to offer his books, prints, and curios to some institution in Wales as the nucleus of a national collection. Eventually he offered them to the University College of Wales at Aberystwyth on condition that they should find a suitable site for a building. He met the College authorities in 1897, and by the generosity of the then President, Lord Rendel, a freehold piece of land of 14 acres near the town was secured. From this time onwards Sir John Williams took a great interest in the work of the College; in due course he was elected Vice-President, and, on the death of Lord Rendel in 1913, President Meantime the Welsh Members of Parliament had secured a promise from the Government to found a National Library and Museum for the Principality. Vigorous campaigns started in various towns for the honour of being selected as the seat of the new institutions. Sir John Williams took a leading part in advocating the claims of Aberystwyth. He addressed meetings all over Wales and was everywhere received with enthusiasm. Finally, the Government appointed a small commission which decided that the Library should be at Aberystwyth and the Museum at Cardiff. Sir John Williams, naturally, was nominated President of the Library, of which he is considered the founder, and as soon as temporary buildings were available, he presented his great collection of books. In 1911 he had the satisfaction of presiding at the ceremony when the present King and Queen, with whom he had been intimately associated, laid the foundation-stone of the building, which was completed in 1916. There had been a time when the term "national" had suggested to many that the library should contain only Welsh books and manuscripts; but this was far too small an idea to appeal to Sir John Williams, who did not adopt the narrow view of Welsh nationalism. In consequence his library is in process of becoming one of the great libraries of the world. Like the British Museum and four other libraries it enjoys the privilege of receiving a free copy of every book published in Great Britain, and it also has a large annual grant from the Government. Already a great impetus to Celtic studies has been given by the collection in one place, from country houses and peasant homes, of books and manuscripts never previously available for inspection. "The Library," writes Principal J. H. Davies, of the University College of Wales, "will ever remain as the memorial of a far-seeing and single-minded man whose only ambition was to do something to forward the highest ideals of his fellow countrymen."

Sir John Williams was a delightful companion and a good host; he was outspoken, but made few (if any) enemies. He leaves behind him the memory of a kind and truthful man as well as the influence of a great teacher and obstetrician. In the words of Sir Francis Champneys: "Those who are doing good work in a department which has made great advances and stands much higher in the eyes of the profession and the public than it did half a century ago, ought to remember that they owe this largely to such men as John Williams."

There is no heir to the baronetcy.

## SIR JAMES CANTLIE, M.A., M.B., C.M., LL.D. ABERD., F.R.C.S. ENG., D.P.H. LOND.

Sir James Cantlie, who died in a London nursing home on May 28th at the age of 75 years, was a man whose services to medicine were great both in the field of tropical diseases and of first-aid for the sick and wounded. Taken ill last March in Scotland, he was brought to London, where he gradually failed. His death was not unexpected.

SIR JAMES CANTLIE.

James Cantlie was born at Dufftown, Banffshire, on Jan. 17th, 1851, where his father, a banker, was at heart a farmer, and handed on to him a love of outdoor life. Educated at the Milne's Institution, Fochabers, he went on to Aberdeen University, graduating with honours in natural science in 1871, and proceeding to Charing Cross Hospital for the clinical part of his medical study. Before taking his qualification in 1873 he had become demonstrator of anatomy in the hospital, a post which he combined with that of assistant surgeon in 1877, when he took the F.R.C.S At this time he acquired the familiarity with anatomy and surgical technique and the facility for teaching which he was to put to such good use later. In 1887, after taking the public health diploma of the Royal Colleges, he paid his first visit to the Far East, becoming one of the founders of the College of Medicine in Hong-Kong at which he served as dean for a period of seven years. It was then that he came into close association with the man who turned China from an autocracy into a republic; Sun Yat Sen was educated in medicine at the Hong-Kong College and remained throughout his amazing career a close friend of Cantlie. Cantlie was not only Sen's biographer but his rescuer in time of trouble, for it was the personal influence of Cantlie and Manson which secured Sen's release in October, 1896, from the Chinese Legation in London, where he was detained as a prisoner. Cantlie's influence in China was far-reaching, for it was largely owing to him that during the period of its awakening a supply of English-taught medical men became available. And it was not only in China that he satisfied his keen desire to acquire and transmit knowledge of tropical diseases. He joined the Egyptian Cholera Expedition of 1883, inquired into the distribution of leprosy in the East Indian and Pacific Archipelago, and after his return to London became surgeon to the hospital at the Royal Albert Docks, where seafaring men from all parts of the world are received and cared for. He was instrumental in founding the Society of Tropical Medicine and Hygiene, over which he presided for three years, and he inaugurated in 1898 the *Journal of Tropical Medicine*, of which he was joint editor. During this period of his life hardly a year passed without some substantial contribution from his pen to medical science, whether on the surgical treatment of colitis, the therapy of sprue, the ætiology of climatic bubo, or the prevalence of tropical abscess of the liver. Apart from contributions on tropical diseases to the compendiums of Allchin, and Gould and Warren, he edited a translation of Scheube's "Diseases of Warm Countries," to which he added a section on yellow fever. His desire not to miss any important outbreak of the diseases in which he was particularly interested is illustrated by the fact that he was travelling with his wife in Vladivostok when he heard of an outbreak of plague in Hong-Kong; the only way to reach his destination was by a Russian steamer, a passage on which was at first refused. Eventually his wife explained to the Russian officers his reasons for wishing to go, and they were too gallant to refuse her appeal. In 1900, when there was a risk of plague in London, his services were commissioned by Sir Shirley Murphy, who appointed him to visit suspects and assist practitioners in their diagnosis.

Alongside these interests Cantlie was developing that application of surgical principles to the needs of everyday life with which his name is chiefly associated. From 1885 to 1888 he commanded the Volunteer Medical Staff Corps in London, and quite early became chief surgeon to the Metropolitan Division of the St. John Ambulance Brigade. He has been called the perfect teacher, for his graphic touch impressed his points firmly upon his hearers, so that, as one of his pupils has said, it was the humorous remark which came to the aid of memory at the time of trial. Practically unaided he founded in 1914 the College of Ambulance in London. Modern military ambulance was organised in Germany, and it was a source of pride to Cantlie that civil ambulance had its origin in Great Britain as a subject outside the regular teaching of the medical schools. V.A.D. training, which began as long ago as 1908, only took definite form in 1914, when more than 25,000 persons were trained in the elements of life-saving at the College. Unfortunately the economic side of the working was not on a level with the technical, and a scheme which might have been lasting came to a premature end, involving considerable monetary loss to Cantlie himself, who never counted his own risks.

The spirit of joyous adventure which carried Cantlie through his many-sided career made him a source of entertainment in intimate circles. One of his friends recalls the unction with which he sang Charles Mackay's songs or burlesqued the lecturer on parasites, producing specimens from his own person. He justly adds that Cantlie combined Rabelaisian humour with the erudition of a Rabelais. It was in 1918 that James Cantlie received the knighthood of the British Empire. A year later his own university honoured him with the LL.D., and his foreign orders were numerous, from the Imperial Order of Osmanieh (fourth class) downwards. In 1884 he married Mabel, daughter of Robert Barclay Brown, who was the great supporter of his work in public and in private, and bore him four sons. Lady Cantlie died in 1921.

## ERNEST SEPTIMUS REYNOLDS, B.Sc. Vict., M.D., F.R.C.P. Lond.

Dr. E. S. Reynolds, Emeritus Professor of clinical medicine in the University of Manchester, who died on May 22nd, was notable in the profession for his philosophical outlook on medical problems. He was an able neurologist and teacher of hygiene, and will be remembered especially in connexion with an epidemic of beer poisoning.

Born in 1861, Ernest Septimus Reynolds was the son of Mr. J. H. Reynolds, of Manchester, and spent most of his life in that city. He was educated at Owens College, of which he was an exhibitioner, and graduated in science at the Victoria University. In 1883 he took the diplomas of M.R.C.S. and L.S.A. and afterwards spent several years in resident posts at asylums and hospitals, which gave him wide experience. Appointment to the principal Manchester hospitals followed. For 16 years he was visiting physician to the Workhouse Infirmary and he also joined the staff of Ancoats Hospital, to which he became senior physician, and of the Manchester Royal Infirmary. His work and qualities naturally led to his appointment as professor of clinical medicine in the University and in this capacity he found scope for his considerable talents. The Royal College of Physicians of London elected him a Fellow in 1896, and not long afterwards he came prominently before the profession and the public as a result of his researches into the famous beer poisoning epidemic. It was in June, 1899, that unusual symptoms began to manifest themselves among patients attending the Manchester hospitals. Many presented skin eruptions of a more or less indefinite character; there were numerous cases of erythromelalgia or the painful red neuralgia of Weir Mitchell; suffusion of the conjunctiva and nasal mucous membrane was common, and Dr. Reynolds observed a remarkable increase in herpes zoster, which seemed to be in epidemic form. At the beginning of August, 1900, an extraordinary number of cases of so-called alcoholic paralysis were admitted into the Workhouse Infirmary, and the suggestion that this increase was due to wrongful expenditure of money freely circulated after the South African War did not satisfy Dr. Reynolds. Consideration of the incidence made him realise that in this district the so-called alcoholic neuritis was only occurring amongst beer-drinkers and not amongst those who took spirits; and then he noticed the association of the nervous lesions with the herpes and the other forms of dermatitis. Arsenic was the obvious cause of such an association and it did not take him long to find its source. On examining a specimen of beer he found that arsenic was present in considerable quantities, and thus began the controversy which was to rage for many a day. All sorts of ideas were put forward to explain away the unfortunate association of arsenic with the national beverage, but eventually the poison was definitely traced to certain of the sugars used in the brewing process. All these came from the same factory and their presence was afterwards seen to be due to the use of impure sulphuric acid in their preparation. The quantity of arsenic which found its way into the beer varied from 1/30th to 1½ gr. of arsenious acid to the gallon. Although probably many thousands of people were more or less affected by the poisoning it was difficult to give the exact numbers or to say how many cases were fatal, as before Dr. Reynolds discovered the facts the patients were treated for rheumatism, gastritis, diarrhœa, simple skin eruptions, or chronic alcoholism, and, of course, there were many who had no serious symptoms. It was estimated that up to the end of November, 1900, there were at least 2000 cases in Manchester alone, and during the last three months of that year Dr. Reynolds himself had charge of 340 arsenical patients at the Manchester Workhouse Infirmary and treated nearly 500 in all.

As a clinician, Dr. Reynolds won a reputation for lightning diagnosis. Few could sum up a case as rapidly as he did, for he had an extraordinary power of grasping the essentials of an illness and of fixing on the treatment likely to be useful. He was at his best with nervous cases; the border-line of mental and organic nervous disease was specially interesting to him, and his early training in asylum work gave him a groundwork which not many physicians possess. As a lecturer he was not eloquent; he spoke somewhat rapidly and was rather difficult to hear. But he was always worth listening to, for he spoke his own ideas and from his own experience. In 1917 he delivered a Bradshaw lecture to the Royal College of Physicians in which he attempted to put forward a fundamental classification of disease, and in 1920, in a presidential address to the Neurological Section of the Royal Society of Medicine, he applied the principles laid down to the ætiology of nervous diseases. These lectures are deeply interesting as contributions to the study of medicine from an academic standpoint. As an administrator, Dr. Reynolds was quick to make up his mind, and although in the medical school at Manchester he did not introduce many reforms, he quickly saw weak points in schemes laid before the Medical Board and was a critical opponent of them until their defects were remedied. Thus he well served a University which will honour his memory.

Dr. Reynolds was a deputy lieutenant for the county of Lancaster. He married Rosa Maud, daughter of Mr. Thomas Hooker, and leaves one daughter.

# Medical News.

Society of Apothecaries of London.—At examinations held in May the following candidates passed in the subjects indicated:—

*Surgery*—R. V. Cookes, Guy's Hosp.; C. F. L. Hassard, McGill; S. E. Hymans de Tiel (Sect. II.), Royal Free Hosp.; L. O. Jaggnasar, St. Mary's Hosp.; and K. G. B. McMahon, Charing Cross Hosp.

*Medicine*—R. V. Cookes, Guy's Hosp.; M. Escovar, Cambridge and London Hosp.; J. E. Howard, St. Mary's Hosp.; *R. F. Middleton, Birmingham*; *J. Pattis*, Innsbruck and Univ. Coll. Hosp.; A. Purvis, Durham; H. A. Sack, Middlesex Hosp.; M. Stinnesbeck, Frieburg and Royal Free Hosp.; and F. Widlake, Guy's Hosp.

*Forensic Medicine*—R. P. Charles, King's Coll. Hosp.; M. Escovar, Cambridge and London Hosp.; H. J. Fordham, St. Mary's Hosp.; E. J. Jones, Middlesex Hosp.; E. Kessel, Kharkoff and Westminster Hosp.; P. H. L. Moore, Sydney and St. George's Hosp.; A. Purvis, Durham; R. I. Richards, St. Bart.'s and St. George's Hosps.; and H. A. Sack, Middlesex Hosp.

*Midwifery*—A. K. A. Carter, Univ. Coll. Hosp.; L. O. Jaggnasar, St. Mary's Hosp.; K. G. B. McMahon, Charing Cross Hosp.; R. F. Middleton, Birmingham; E. Kessel, Kharkoff and Westminster Hosp.; I. Rivlin, Middlesex Hosp.; and A. D. Shubsachs, Manchester.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: M. Escovar, C. F. L. Hassard, S. E. Hymans de Tiel, E. J. Jones, E. Kessel, P. H. L. Moore, I. Rivlin, H. A. Sack, and F. Widlake.

University College Hospital Medical School. The Bucknill entrance scholarship, entitling the holder to the course of intermediate medical studies at University College and the final course at the hospital and medical school, will be held on June 29th. The subjects of the examination are chemistry, physics, botany, and zoology.—Two Goldsmid *entrance scholarships entitling the holder to* the final course are offered for competition in June. The subjects of the examination are anatomy, physiology, or general pathology. Further particulars may be had from the secretary of the school.

London Inter Collegiate Scholarships Board. Six medical entrance scholarships and exhibitions of an aggregate total value of £512, tenable in the Faculty of Medical Sciences of University College, and in the medical schools of University College Hospital, the London Hospital, and the London (Royal Free Hospital) School of Medicine for Women, will be offered. The examination will begin on June 29th. *Full particulars may be obtained from* the secretary of the Board, Mr. S. C. Ranner, the Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

Vacation Course in Climatology.—The Davos Medical Society announces a vacation course, on tuberculosis and the climate of altitude, to be held at Davos from August 22nd to 29th. Prof. K. Dorno will open with two lectures on physical climatology. Prof. A. Löwy will follow on pathological physiology, and Drs. Biland and Hans Staub will deal with pathology. A series of 20 lectures on diagnosis, treatment, and prognosis will be given by the various medical men in practice in the Davos Valley, and two special addresses will be given, one by Prof. F. Sauerbruch, of Munich, on the relations between medicine and general culture, and the other on "Paralipomena," by Dr. Karl Turban. Arrangements have been made for lodging at a moderate price, and the Rhetian railway offers a substantial reduction on its ordinary fares. Information can be obtained from the Commission of Holiday Courses for Doctors, Davos Platz, Switzerland.

National Medical Union.—The thirteenth annual general meeting was held on May 29th, when the following resolution was passed unanimously:—

> "It is certain that in London and the provinces a very large number of insured persons when sick refuse to consult panel doctors, although they are required by law to contribute a fixed sum annually to the salaries of these doctors, and are unable to obtain any rebate towards their medical expenses. The National Medical Union regards this condition as grossly unfair to the insured, and while expressing its great surprise at the silence on the subject in the report of the recent Royal Commission on the working of the National Insurance Acts earnestly invites the Minister of Health to examine the subject with a view to giving fair play to such insured persons as do not wish to consult Government doctors."

The Union claims to speak for the non-panel element in the profession and thus to represent over 30 per cent. of the medical men in the country.

Royal Institution.—A general meeting of members will be held on Monday, June 7th, at 5 P.M. On Wednesday, June 9th, at 5.15 P.M., Prof. Joseph Barcroft will lecture on the Lungs, and on Thursday, June 10th, at 5.15 P.M., Mr. Newton Friend, D.Sc., will lecture on Science in Antiquity.

Dr. C. M. Rolston (Chief Medical Officer) has been appointed by the King an Official Member of the Executive Council of the Presidency of Dominica and an Official Member of the Legislative Council of that Presidency.

Glasgow Post-Graduate Medical Association. Arrangements have been made for post-graduate teaching in Glasgow which include a general medical and surgical course from August 16th to Sept. 11th, special courses in various subjects, and clinical assistantships. The syllabus for the summer session and other information may be had from the secretary of the Association, at the University, Glasgow.

Röntgen Society.—The annual general meeting will be held on Tuesday, June 8th, at 8.15 P.M., at 32 Welbeck-street, London, W. Following the election of officers a paper will be read by Mr. A. E. Speight entitled Abstracts from Apparatus and Technique for Radiography of the Accessory Sinuses, and a paper by Mr. L. A. Levy, D.Sc., and Mr. D. W. West on a New Method of Dosage for Use in Actinotherapy.

London Dermatological Society.—The annual oration will be delivered on Wednesday, June 16th, at 1.30 P.M., by Sir Humphry Rolleston, at St. John's Hospital, Leicester-square. His subject will be the Relations of Dermatology and General Medicine. The annual dinner of the society will be held at the Trocadero Restaurant at 6.30 P.M. for 6.45. Sir Humphry Rolleston will be the guest of the Society.

The Site of Bethlem Hospital.—At a recent meeting of the London County Council, Lord Monk Bretton, Chairman of the Parliamentary *Committee, gave* explanations as to the future of the site of Bethlem Hospital which was recently purchased by Lord Rothermere for a public park to be named after his mother, the late Geraldine Mary Harmsworth. The Corporation of London are the freeholders and in consideration of the Monks Orchard site of the new hospital being handed over to them they will vest the South London freehold in the London County Council. The old buildings are to be removed by the governors of Bethlem "unless otherwise agreed between the governors, Lord Rothermere, and the Council." It is greatly to be hoped that these interesting buildings will be preserved.

Bicentenary of the Edinburgh Medical Faculty.—This year marks the bicentenary of the Faculty's foundation and arrangements are now complete for the special celebrations on June 10th and 11th. A dinner is to be held in the upper library of the old College on June 10th, at which many distinguished guests from abroad and from this country will be present. There will be an honorary graduation in the McEwan Hall in the morning of June 11th, when an address will be given by Sir George Newman, Chief Medical Officer of the Ministry of Health, and thereafter a service will be conducted in St. Giles Cathedral by Prof. W. P. Paterson. The honorary graduates will be entertained to luncheon by the Royal College of Surgeons and in the afternoon Sir John Gilmour, Secretary for Scotland, will open the reconstructed department of surgery, which includes the new research department. This ceremony will take place in the McEwan Hall. In the evening the Royal College of Physicians will entertain the honorary graduates to dinner, and the celebrations will end with a reception in the Royal Botanic Gardens.

Celebration of Prof. Richet's Jubilee.—The celebration of the jubilee of Charles Richet last week at the Paris Academy of Medicine was attended by many persons of high standing, including Mr. Painlevé (Minister of War), Marshal Foch, Mr. Henneguy (President of the Society of Pathology), Prof. Roger (Dean of the Paris Faculty of Medicine), *Prof. Bar (President* of the Academy of Medicine), Prof. Gley (of the College of France), and Prof. Frédéricq (of Brussels). The last named invested Prof. Richet, on behalf of the King of the Belgians, with the insignia of Grand Officer of the Order of Leopold. Marshal Foch then, in the name of the President of the French Republic, pinned on his breast the emblem of Grand Officer of the Legion of Honour. After a series of short addresses by Prof. Richet's fellow scientists Mr. Painlevé congratulated him on his brilliant career and offered to him a jubilee book and his bust in bronze executed by the sculptor Landowski. In his reply, Prof. Richet expressed his gratitude not only to those who were present, but also to such of his collaborating masters and colleagues as had passed away.

A Russell Lodge bed, endowed by the Tinfoil (Hospital) Fund of the Ancient Order of Druids, has been dedicated at the Royal Northern Hospital.

Dr. J. R. Leeson, J.P. for Middlesex, has been unanimously appointed Charter Mayor by the Twickenham Incorporation Committee.

On May 28th Dr. George Alexander Pirie, of Dundee, was presented with the Carnegie Hero Fund award of a bronze medallion and the first instalment of £100 towards an annual allowance of £200. Dr. Pirie has become permanently incapacitated as the result of injuries received during work with X rays.

The Cancer Hospital, Kensington.—A course of post-graduate lectures will be given at the Cancer Hospital in June and July at 4.30 P.M., the lecturers including Mr. W. E. Miles, Mr. Cecil Rowntree, Sir James Dundas-Grant, Mr. P. P. Cole, Mr. C. A. Joll, Dr. E. S. Rowbotham, Mr. C. E. Shattock, Dr. Robert Knox, Mr. R. Jocelyn Swan, Sir Thomas Horder, Dr. A. Leitch, and Dr. Stanley Wyard. The first lecture will be delivered at 4.30 P.M. on June 9th by Mr. Miles on Carcinoma of the Rectum, and Mr. Rowntree will lecture on June 11th on Cancer of the Breast. Subsequent lectures will be announced in our Medical Diary.

British Hospitals Association.—The sixteenth annual meeting and conference will be held in the Town Hall, Portsmouth, on June 24th and 25th, Sir Arthur Stanley presiding. The first day programme includes an address by Dr. H. L. Eason on Pension Schemes for Officers and Nurses, and one by Sir John Paget, K.C., on Street Accidents and Compensation Cases. On the second day Dr. S. C. Dyke will read a paper on the Pathological Service of the General Hospital. A discussion will follow each of these addresses. In the afternoon of June 25th visits will be paid to Portsmouth Hospital, Royal Naval Hospital, Haslar; H.M.S. *Victory*, a battleship, and a submarine. Further particulars may be obtained from the secretary of the Association at 33, Bloomsbury-square, London, W.C. 1.

Presentation to Sir Frank Colyer.—At the annual general meeting of the Odontological Section of the Royal Society of Medicine held on May 31st, a presentation was made by Mr. Lewin Payne, President of the Section, to Sir Frank Colyer in recognition of his services as honorary curator of the Odontological Museum. An address was presented to Sir Frank Colyer, and a sum of £200 subscribed by members of the Section will be used for a Colyer prize to be awarded triennially to dental surgeons of not more than five years' standing for the best piece of research in some branch of dental science. The Odontological Museum was founded by the old Odontological Society. When the society was merged in the Royal Society of Medicine the museum was entrusted to the Royal College of Surgeons, which undertook responsibility for its upkeep. The museum still retains its separate identity and its curator is appointed by the Odontological Section of the Royal Society of Medicine. Under Sir Frank Colyer's devoted care it has been greatly enlarged and the Council of the Royal College of Surgeons has recently decided to enlarge the available accommodation by about one half. Largely owing to the work of Sir Frank Colyer the Odontological Museum is probably the finest collection of dental specimens in the world.

Endowment of a British College of Nurses.—The *British Journal of Nursing* for May contains the announcement of an anonymous donation of more than £100,000 to found a British College of Nurses, to be composed at first of Foundation Members, all of whom will be registered women nurses, and of Foundation Fellows occupying responsible official positions in the nursing world. After an initial period of grace membership will be limited to registered nurses who pass an examination and pay an entrance fee. Such a diploma, it is suggested, will become essential for those who wish to gain higher posts in the nursing profession, and the higher professional status offered is designed to attract candidates of a desirable type to adopt nursing as their profession. The Council of the College will appoint lecturers, teachers, inspectors, and examiners; will offer legal advice to its Members and Fellows, and provide for their assistance in sickness, accident, or old age. The founders of the College intend that its work shall be attended with due ceremony; its meetings are to be opened with prayers; Members and Fellows will be required to take a solemn oath and to give an undertaking of professional and personal conduct, and members of the Council will be entitled to wear a distinctive academic robe. The two trustees, whose names are not mentioned but one of whom is stated to be the treasurer, are to nominate the officers of the first Council, and, as soon as the complete Council has been nominated, further information will be available from 431, Oxford-street, London, W. 1.

As we go to press we learn with deep regret of the death of Sir William Leishman, Director-General, A.M.S., after a short illness.

A New Children's Hospital.—Sir William Hamer, the late chief medical officer of the London County Council, has opened a small children's hospital in the grounds of the Rye-lane Clinic, Peckham. Children suffering from adenoids and tonsil troubles are to be treated there. Hitherto they have had to go to Woolwich or one of the general hospitals.

James Mackenzie Institute for Clinical Research.—On Monday, June 14th, at 4 P.M., Dr. Maitland Ramsay, hon. director of the Institute, will give the introductory lecture of the post-graduate course to be held at St. Andrews from June 14th–30th. His subject will be the Principles of the Reflex Arc as applied to the Function of Vision. Particulars of the course may be had from the secretary.

A Year of St. Bartholomew's Hospital.—The annual report of the treasurer, Lord Stanmore, has just been issued. It is, as usual, one of the fullest and most interesting of hospital records, and contains much in the way of statistics and other information of value to those who are professionally concerned with hospital work in any form. The in-patients numbered 9191; the casualty patients 66,601, and during the year 2714 cases of street accidents or illness were brought in. At £184,000 the income showed a reduction of £22,000, chiefly accounted for by a drop in legacies. The second block of Queen Mary's Home for Nurses, which will bring the number of bedrooms up to 257, will be ready for occupation during the present month. It is stated that in the near future it will be necessary to make a material addition to the nursing staff to allow a sufficient margin for holidays, illness, and emergencies, and to provide facilities for study.

The late Major H. Dutch.—Major Henry Dutch, who died on April 30th after a long illness, was born in Dublin 64 years ago. He was trained at Coombe Hospital, Dublin, and at Middlesex and St. Mary's Hospitals, London, taking the diploma of L.R.C.P. Lond. in 1886; ten years later he became M.D. Brux. For over 30 years he practised in Mayfair with great success, and he was a notable figure in the district. A member of the Westminster City Council, he represented the Grosvenor ward for a quarter of a century, and previously he had been a member of St. George's vestry. From 1899 onwards he was public vaccinator for the St. George's, Hanover-square district. During the war Major Dutch was attached to the 4th (City of London) Royal Fusiliers and was physician to the Bancroft Military Hospital; he was also on the staff of the Assistant Provost-Marshal, London district. In 1918 he invented the aurorascope, which has been widely used by practitioners. Major Dutch leaves a widow and one daughter, who is also a member of the Westminster City Council.

# Medical Diary.

## SOCIETIES.

ROYAL SOCIETY, Burlington House, W.

Thursday, June 10th.—4.30 P.M., *the following papers will be read:* A. V. Hill: The Viscous-Elastic Properties of Smooth Muscle. A. S. Parkes: (1) Observations on the Œstrous Cycle of the Albino Mouse. (2) On the Occurrence of the Œstrous Cycle after X Ray Sterilisation. (Communicated by Prof. J. P. Hill.) Isabella Gordon: The Development of the Calcareous Test of *Echinocardium cordatum.* (Communicated by Prof. E. W. MacBride.) J. Walton: Contributions to the Knowledge of Lower Carboniferous Plants. (Communicated by Prof. F. E. Weiss.) J. H. Priestley and E. Rhodes: On the Macro-Chemistry of the Endodermis. (Communicated by Dr. F. F. Blackman.) D. Keilin: A Comparative Study of Turacin and Hæmatin and its Bearing on Cytochrome. (Communicated by Prof. J. Barcroft.) E. Ponder: The Equations applicable to Simple Hæmolytic Reactions. (Communicated by Sir E. Sharpey Schafer). J. P. Hoet and Phyllis Kerridge: Observations on the Muscles of Normal and Moulting Crustacea. (Communicated by Prof. A. V. Hill.) C. H. Best and H. P. Marks: Additional Note on the Effect of Insulin on the Lactacidogen Content of the Skeletal Muscles. (Communicated by Dr. H. H. Dale.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, June 7th.—8.30 P.M.—Social Evening. Fellows, Members of Sections, and their friends will be received in the Library by the President, Sir StClair Thomson. 9.30 P.M., Mr. Frederick T. G. Hobday (President of the Section of Comparative Medicine) will give an illustrated address on Our Animal Friends as Patients.

WEDNESDAY —4 30 P.M., SURGERY SUBSECTION OF PROCTOLOGY Specimens will be on view at 4 P.M. Annual General Meeting Discussion The Value of the Closed Methods in Resection of the Colon. Openers Prof John Fraser (Edinburgh) and Mr Seton S. Pringle (Dublin). Other speakers Dr T de Martel (Paris) Mr Grey Turner, Mr Ernest Miles, and Mr Lockhart Mummery

FRIDAY —8 30 P.M., OPHTHALMOLOGY (Cases at 8 P.M.). Dr Ransom Pickard The Visual Field in Atheroma of the Retinal Vessels. To be followed by the Annual *General Meeting.*

## LECTURES, ADDRESSES, DEMONSTRATIONS &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W

TUESDAY, June 8th.—5 P.M., Sir Thomas Lewis Observations upon Blood vessels of the Human Skin. (First Croonian Lecture )

THURSDAY —5 P.M. (second Croonian Lecture)

NORTH EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N

MONDAY, June 7th.—10 A.M., Surgical Out patients Mr. W E. Tanner 10 30 A.M., Gynæcological Operations Mr A. E. Giles: Throat, Nose, and Ear Operations Mr W Ibbotson 2 P.M., Medical Surgical, and Gynæcological Clinics, Operations, 6 30 P.M., Venereal Department.

TUESDAY —2 P.M., Medical, Surgical, Throat, Nose and Ear Clinics, Operations.

WEDNESDAY —10 30 A.M, Surgical Operations: Mr E. Gillespie. 2 P.M., Medical, Eye, and Skin Clinics, Operations. 3 P.M., Dr. Oliver Selected Cases of Skin Disease 5 30 P.M., Venereal Department.

THURSDAY —10 30 A.M Dental Out patients Mr E. S Pierrepont. 2 P.M Medical, Surgical, and Throat, Nose and Ear Clinics, Operations. 3 P.M. Demonstration of Cases of the Infectious Fevers: Dr F Thomson at the North Eastern Hospital, St. Ann's-road N 5 P.M., Operations.

FRIDAY —10.30 A.M., Eye Operations Mr N Fleming. 2 P.M., Surgical, Medical, and Children Clinics Operations. 3 P.M., *Gynæcological Clinic* 6 30 P.M., Venereal Department.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1, Wimpole-street, W

MONDAY, June 7th, to SATURDAY, June 12th.—Special afternoon demonstration in clinical surgery on Wednesday at *St. Mary's Hospital, by Mr V Z. Cope,* at 3 30 P.M. Special demonstration in clinical ophthalmology by Mr Whiting, at the Royal London Ophthalmic Hospital Thursday, at 12 45 P.M These demonstrations are open to all members of the medical profession, without fee.—ALL SAINTS HOSPITAL, Vauxhall Bridge-road, S.W A special course of instruction in urology Clinical and cystoscopic demonstration, Monday and Wednesday afternoons and evenings, Thursday afternoon and Saturday afternoon. Special lecture by Mr. H. L. Attwater, on Wednesday, on Urethroscopic Appearances in the Posterior Urethra.—CHELSEA HOSPITAL FOR WOMEN Arthur-street, S.W Beginning on Wednesday a post graduate course in gynæcology will be held. Operations and demonstrations daily —CHILDREN'S CLINIC, Conway-street, N.W. Second week of the Course in Diseases of Children The items take place at the Children's Clinic, the Royal National Orthopædic Hospital, *Bethlem Royal Hospital,* the *Royal Waterloo* Hospital, and College Farm, Finchley Further information from the Secretary, Fellowship of Medicine.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W C.

TUESDAY, June 8th.—5 P.M., Dr Graham Little Differential *Diagnosis of some Common Skin Diseases.*

THURSDAY —5 P.M., Dr A. Whitfield Eczema (2)

CANCER HOSPITAL, Fulham road, S.W

WEDNESDAY, June 9th.—4.30 P.M., Mr. W E. Miles Carcinoma of Rectum.

FRIDAY —4.30 P.M., Mr Cecil Rowntree Cancer of the Breast.

ST MARY'S HOSPITAL INSTITUTE OF PATHOLOGY

THURSDAY, June 10th.— 5 P.M., Dr John Freeman The Pathological Mechanisms of the Asthma Syndrome.

NATIONAL HOSPITAL, Queen-square, Bloomsbury, W C.

MONDAY, June 7th.—2 P.M., Dr Hinds Howell: Out patient Clinic. 3.30 P.M., Mr Leslie Paton The Trigeminal Nerve in Lesions of the Eye.

TUESDAY —2 P.M., Dr Walshe: Out-patient Clinic. 3.30 P.M., Mr Armour: The Surgery of Compression Paraplegia.

THURSDAY —2 P.M., Dr Kinnier Wilson Out-patient Clinic. 3.30 P.M., *Dr Hinds Howell* Disseminated Sclerosis.

FRIDAY —2 P.M., Dr Adie Out patient Clinic. 3 30 P.M., Mr Elmquist: Demonstration of Remedial Exercises (in Exercise Room)

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES, Quay-street

THURSDAY, June 10th.—4.30 P.M., Dr. Jenkins The Relationship of Bacteriology to Dermatological Diagnosis.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, June 11th.—3.30 P.M. (at the *Royal Infirmary*), Mr Pooley Eye Conditions met with in General Disease.

## Appointments.

St. Thomas's Hospital SOUTAR, K. A., M.B., B.S. Lond., CHIESMAN, W E., M.B., B Ch. Cantab., MILLER, A. K., M R.C.S , L.R.C.P Lond., EDWARDS, J L., M.B , B.Ch. Cantab LENNANE, G A. Q , M.B. B Ch. Cantab., MILLER, N A., M.R.C.S., L.R.C.P. Lond., WALTER, A. G , M R.C.S., L.R.C.P Lond., TRIM E. A., M B , B.Ch. Cantab , Casualty Officers and Resident Anæsthetists, TOMPSON, B. E., M B , B Ch. Oxon., THOMSON, G W. R., M.B., B.S. Lond., REES, W E., M.B., B.S Lond. DE JERSEY, G W S., M B , B Ch Cantab , Resident House Physicians GIBBENS, J H., M.B , B Ch. Cantab , Resident House Physician for Children , WRIGLEY, A. J , M.B., B.S. Lond., BARRETT J C. V.C., M.B., B.S. Lond., CRAWFORD D P , M.B. B.S. Lond., DOBIE, J M., M.B., B.Ch. Cantab , Resident House Surgeons JACOBSON, J N , M R.C.S., L.R.C.P Lond., Resident Orthopædic House Surgeon , GRUT, J C. P., M.R.C.S., L.R.C.P Lond., NICHOLSON, H.W , M.R.C.S., L.R.C.P. Lond., Resident House Surgeons *BOGGON*, R.H , M.B , B.S.Lond., SIMS, T H. M.B., B.Ch Cantab , Obstetric House Physicians COVERDALE, H V M.B , B Ch. Cantab , STANLEY, C. A., M.R.C.S., L.R.C.P Lond., Ophthalmic House Surgeons, SCREECH, J A., M.R.C.S., L.R.C.P Lond , BROOER, C. E., M.R.C.S., L.R.C.P Lond., PURCELL, F W F., M R.C.S., L.R.C.P Lond., LLOYD-WILLIAMS, P M R.C.S., L.R.C.P Lond , L.D.S. MAHONER, H. L, F R.C.S. Edin., GILLAM, J F E., M R.C.S , L.R.C.P. Lond., SWORN, B R., M.R.C.S., L.R.C.P. Lond., NEILSON, D F A., F R.C.S. Eng., CANBY, A. L., M.R C.S., L.R.C.P Lond., GLENNIE, R. S., M.R.C.S., L.R.C.P Lond., WALFORD, A. S. H., M.B., B.Ch. Cantab , F R.C.S. Eng., BANNON H T M.D *Lond.*, *BURRIDGE*, C. H , M.R.C.S., L.R.C.P Lond., COOPER, G. K., M.B., B.Ch. Cantab , DEWEY, T S., M.R.C.S., L.R.C.P Lond., MCCAA J. L., M.B., B.Ch. Edin. NICORY, C. M.R.C.S., L.R.C.P Lond., WALTON, L. H. F M.R.C.S., L.R.C.P Lond., DAVIES, T E., M.R.C.S. L.R.C.P Lond., EDWARDS, G C., M.R.C.S., L.R.C.P Lond., LAWSON, D F, M.R.C.S., L.R.C.P Lond., LING, T M., M.R.C.S. L.R.C.P Lond., METCALFE, R. H , M.R.C.S. L.R.C.P Lond. SHIRES, B., M.B Ch.B Edin., THORNTON F S., M R.C.S., L.R C.P Lond., RICKMAN J , M.B., B.Ch. Cantab., CROFT, C. R., M.R.C.S., L.R.C.P Lond., FOTHERGILL, E. L., M.R.C.S., L.R.C.P Lond , DUDGEON, C. R. M.R.C.S., L.R.C.P Lond., SECCOMBE, S. T., M.R.C.S. L.R.C.P Lond., ELLIS, R. W. B., M R.C.S., L.R.C.P Lond., PRITCHARD, E. K., M.R.C.S., L.R.C.P Lond., BROCKMAN, E. P., M.B , M.Ch. Cantab , F R.C.S. Eng , BLAXILL, B., M.R.C.S., L.R.C.P Lond., BYRNE-QUINN, A., M.R.C.S., L.R.C.P Lond., EVANS, L. M.R.C.S., L.R.C.P Lond., CONNELL, A. B , M.R.C.S., L.R.C.P Lond., LECLEZIO, R. L J, M.R.C.S., L.R.C.P Lond., SEVERNE, A. DE M. M.R.C.S , L.R.C.P Lond., Chief Assistants and Clinical Assistants.

## Vacancies.

*For further information refer to the advertisement columns.*

*All Saints Hospital, Vauxhall Bridge-road, S W* —Non. Res. Jun. H.S. £100.
*Barnsley Beckett Hospital and Dispensary*—H P £140
*Barrow-in Furness, North Lonsdale Hospital.*—H.S. £150
*Birmingham, Queen's Hospital* —Dental H.S. At rate of £50.
*Brighton, Royal Alexandra Hospital for Sick Children.*—H.S. £100
*Bristol, Cossham Memorial Hospital, Kingswood.*—Res. M.O £160
*Bristol Education Committee* —Asst Sch. M.O £600
*Bristol Eye Hospital.*—Hon. Consulting P
*Bristol General Hospital.*—Hon. Clin. Assts
*Cambridge University Pathological Laboratory*—John Lucas Walker Studentship £300
*Cheshire Joint Sanatorium, Market Drayton, Salop* —H P. £250
*City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.*—H.P At rate of £100
*Derbyshire Royal Infirmary, Derby* —Venereal Dis. O £750
*Dreadnought Hospital, Greenwich.*—Phys.
*East London Hospital for Children and Dispensary for Women, Shadwell* —H.S At rate of £125
*Edinburgh University*—Chair of Midwifery and Diseases of Women.
*Great Yarmouth General Hospital* —H.S £150
*Halifax Royal Infirmary*—4th H.S. £100
*Hampshire County Council* —Asst. M.O H. £600
*Hampstead General and North West London Hospital, Haverstock Hill, N W* —Pathologist. £600
*Hospital for Consumption and Diseases of the Chest Brompton, S W* —Asst. Res. M.O At rate of £150
*Hove Hospital, Sackville-road.*—Res. M.O £150
*Hull City Mental Hospital, Willerby, near Hull.*—Asst. M.O £300
*Huntingdon Administrative County* —Asst. County M.O and Asst. Sch. M.O £600
*Indian Research Fund Association, Simla* —Research Work. Malaria, also Entomologist. Each at rate of Rs.1500 mensem.
*Kenlaw House, Colinsburgh, Fife* —Asst Res P £500.
*London Hospital, E* —Hon. Asst Anæsthetist.
*London School of Hygiene and Tropical* Studentships in Tropical Bacteriology in Helminthology Each £250

*Manchester, Ancoats Hospital.*—H.S. At rate of £100.
*Manchester City Public Health Committee.*—Two M.O.'s Locums, 10 guineas weekly.
*Mauritius Government Mental Hospital, Beau Bassin.*—Asst. Med. Supt. 7500 rupees.
*Miller General Hospital for South-East London, Greenwich-road, S.E.*—Hon. P. to Special Dept. for Children. Also Res. Cas. O. £150. H.S. £125.
*Norfolk Education Committee.*—Asst. Sch. M.O. £600.
*Northampton County Hospital, Berry Wood.*—Jun. Asst. M.O. £350.
*Oxford, Radcliffe Infirmary and County Hospital.*—H.S., Obstetric H.P. Each at rate of £120.
*Preston, County of Lancaster Royal Infirmary.*—H.P. £175.
*Queen's Hospital for Children, Hackney-road, Bethnal Green, E.*—Cas. O. At rate of £100. Also Clin. Asst. 5s. per attendance.
*Royal Northern Hospital, Holloway, N.*—Ophth. S.
*St. John's Hospital, Lewisham.*—Asst. S. in Ear, Nose and Throat Dept.
*St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.*—Clin. Assts.
*Salford Royal Hospital.*—Two H.S.'s. and Cas. H.S. Each at rate of £125.
*Sedbergh School, Sedbergh, Yorkshire.*—School M.O.
*Sheffield, South Yorkshire Mental Hospital.*—M.O. £400.
*Sudan Medical Service.*—Four M.O.'s. £E.720.
*University of London.*—External Examiners.
*Virol, Ltd.*—Research Scholarship in Clin. Pathology. £200.
*Warrington Infirmary and Dispensary.*—Jun. H.S. £175. Also Second Jun. H.S. £150.
*West-End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.*—Asst. P. and Clin. Asst.
*West London Hospital, Hammersmith, W.*—H.P., H.S., Aural H.S. and Res. Cas. O. Each at rate of £100.
*West Middlesex Hospital, Isleworth.*—Asst. to Med. Supt. £250.
*Williton Rural District, Somerset.*—M.O.H. £110.
*Wimbledon Hospital.*—Res. M.O. 100 guineas.

The *Chief Inspector of Factories announces the following vacant* appointments for Certifying Factory Surgeons: Pontefract, Yorks, West Riding; Wylam, Northumberland; and Sutton, Surrey.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, for the *Districts* of the Kington County Court (Circuit No. 22) and Builth; Knighton; Llandrindod Wells; and Presteign County Courts (Circuit No. 28). Applications should reach the Private Secretary, Home Office, London, S.W., not later than June 19th.

# Births, Marriages, and Deaths.

## BIRTHS.

Abraham.—On May 28th, at Brightwalton, Berks, the wife of Dr. Abraham, *of a son.*
Grove-White.—On May 30th, at Lancaster-gate, W., the wife of J. H. Grove-White, M.D., Captain, I.M.S. (*retd.*), of Dyer Court, Cirencester, *of a daughter.*
Peck.—On May 22nd, at Welbeck-street, W., the wife of Dr. Eric F. Peck, of Limassol, Cyprus, of a son (stillborn).

## MARRIAGES.

Fletcher—Willink.—On May 20th, at St. Aldate's, Oxford, Herbert Morley Fletcher, M.D., F.R.C.P., Harley-street, W., to Mary Christina, second daughter of the late W. E. Willink and of Mrs. Willink, Aigburth-drive, Liverpool.
Lees—Newton.—On May 25th, at the British Consulate, Paris, James Ferguson Lees, C.B.E., M.D., late Director-General of Public Health, Egyptian Ministry of Interior, *to* Catherine Dorothy Page, only daughter *of* Mr. and Mrs. John Newton, of Bridgeham, Burstow, Surrey.

## DEATHS.

Cantlie.—On May 28th, at a nursing home in London, Sir James Cantlie, K.B.E., F.R.C.S., LL.D., aged 75 years.
Gabbett.—On May 27th, at Mill-road, Eastbourne, Henry S. Gabbett, M.D., aged 75.
Hall.—On May 29th, at Goldsworth Lodge, Woking, William Henry Hall, L.R.C.P., M.R.C.S., L.S.A., aged 75.
Hood.—On May 27th, at Tower-place, York, William Hood, M.R.C.S. Eng., L.S.A. Lond., in his 80th year.
Jones.—On May 27th, after an operation, Tom Jones, M.R.C.S., L.R.C.P., of Duke's Cliffe, Duke's Brow, Blackburn, aged 37.
Price.—On May 25th, at a nursing home, after a serious operation, Alfred Edward Price, M.D., M.S., of Thanet Lodge, Bromley, Kent, aged 62.
Reynolds.—On May 22nd, at Palatine-road, Withington, Manchester, Ernest S. Reynolds, D.L., M.D., F.R.C.P., Emeritus Professor of Clinical Medicine in the University of Manchester.
Simpson.—On May 30th, at a nursing home, the result of a motor accident on March 30th, Henry Simpson, M.B., B.Ch., M.R.C.S., L.R.C.P., of Mana-ba-ta, Brenchley.

*N.B.—A fee of 7s. 6d., is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts.

## COMMON SKIN COMPLAINTS IN CHILDREN UNDER FIVE.[1]

By A. M. H. Gray, C.B.E., M.D., F.R.C.P. Lond.,

PHYSICIAN FOR DISEASES OF THE SKIN, HOSPITAL FOR *SICK CHILDREN, GREAT ORMOND-STREET.*

My remarks are particularly directed to those skin *conditions of children* under 5 years of age which can be *prevented or dealt* with in child welfare centres.

### The First Year of Life.

*Miliaria Rubra.*—One of the commonest eruptions seen in small infants, often within the first few days of life, is an eruption of pin-head sized papules each surmounted by a small vesicle, the lesions being discrete and not tending to run together and situated chiefly on the trunk, but sometimes on the face. This is a *condition associated* with excessive sweating and is *also* called "red *gum rash.*" It nearly always occurs in infants who are too warmly clad or are kept in hot, stuffy rooms. It subsides very quickly when the cause is removed and if calamine lotion is applied.

*Pemphigus Neonatorum.*—This is a condition in which blisters, varying in size from a pea to half-a-crown, or even larger, occur on the skin of an infant. It is merely an infantile form of *impetigo contagiosa,* and is in the majority of cases due to surface streptococcal infection. Generally the infection can be traced to a whitlow or septic patch on the skin of the mother or nurse. The blisters may commence in any part of the body and obviously spread by local infection. In some severe cases the horny layer of the epidermis *over the* whole body is rapidly separated from the *underlying layers of the epidermis, leading to a rapidly fatal* termination. This latter condition is, fortunately, very rare and is known as Ritter's disease or *dermatitis exfoliative neonatorum.* Pemphigus neonatorum has to be distinguished from congenital syphilitic pemphigus, which is, however, a symmetrical eruption involving chiefly the buttocks, palms, and soles, and is associated with other signs of syphilis, such as wasting, snuffles, the syphilitic wig, and typical syphilitic papules and macules. Pemphigus neonatorum is readily cured, if seen early, but if extensive may terminate fatally. In treatment one of the main points *is to prevent loss of heat by the application of large wet dressings to the* infant. Ointments, however, are *not very* suitable for such moist lesions. I usually advise pricking the blisters and mopping up the fluid carefully, followed by the application of a dressing soaked in lin. calamin. (B.P.C.) to which 1 per cent. or 2 per cent. of hydrarg. ammon. *has been* added, care being *taken only to expose* a small area at a time and covering *the* dressing with cotton-wool.

*Napkin Rashes.*—It is very common to find red erythematous areas developing under the napkin, chiefly on the scrotum, penis, and buttocks, but also extending down the thighs and sometimes *involving the* heels, when they *come* in contact with the napkin. This is known as intertrigo. This condition may be due to infrequent changing of the wet diaper, or to excessive acidity or akallinity of the urine and fæces, or even to carelessly washed-out napkins. The general principles underlying the rectification of abnormal conditions of the urine and fæces by diet and the *administration of alkalis,* &c., would *take* more time than I have at my disposal. As regards local treatment, however, it will generally be found that simple powders and lotions are usually insufficient to afford protection to the skin once it has become inflamed, and I think you will find that *calamine liniment*, which contains equal *parts of olive* oil and lime water, is a *more suitable application.* It is very important to treat the condition in the early stages, as there is a considerable tendency for the eruption to spread and produce a generalised eczema, the trunk, limbs, and face becoming involved in turn. *There is another type* of napkin eruption which is not *uncommon and* that is a papular or papulo-erosive type (the so-called *Jacquet's erythema*). Here we find a number of rather large papules scattered over the prominences of the buttocks, thigh, and scrotum, and sometimes on the calves of *the* legs and heels; they are quite discrete and often eroded on the surface. The chief difficulty arises in the diagnosis from syphilitic mucous patches. In this latter condition, however, the lesions are not confined to the prominences but occur also in the folds, other parts such as the palms, soles, and peri-oral region may be affected with an eruption, while the general signs of syphilis, mentioned above, are generally present. The Wassermann reaction is valuable in doubtful cases. The treatment of Jacquet's erythema is the same as for intertrigo.

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[1] A paper read at a recent meeting of the Maternity and Child Welfare Group of the Society of Medical Officers of Health.

*Facial Eczema.*—This is a common and troublesome condition met with in infants. The subject has recently been fully discussed at the Royal Society of Medicine.[*] There are, in my opinion, at least three types: (1) cases starting on the cheeks or forehead, the primary facial type; (2) cases starting on the scalp and involving the face later; and (3) cases complicating eczematous eruptions which commence in other parts of the body. This last type has been referred to, in part, when dealing with napkin eruptions. The two other varieties require special consideration. The primary facial type almost always occurs in fat and florid infants, who generally give a history of overfeeding. They are ravenous feeders, pump up their food, and are generally constipated. The eruption appears to start as the result of friction, possibly because the gastro-intestinal disturbance causes facial congestion and itching. There is no doubt also that the external temperature plays an important part, as these cases are very much more frequent in the winter than in the summer. There can also be little doubt that the infants who suffer from this condition have an inherent sensitiveness, not only of the skin, but also of the mucous membranes, for they are very prone later in life to develop asthma and a curious itchy condition of the skin, which we call flexural pruritus and which leads to a troublesome form of friction dermatitis. The majority are breast-fed infants. The rash, which first commences on the cheeks or forehead, spreads all over the face, chiefly attacking the prominences, and may then involve the scalp and parts of the trunk and limbs. It may be of the dry, scaly type, or more often is moist, weeping, or crusted. I do not know whether careful feeding will prevent the onset of this condition, but I think a good deal can be done when the disease is established by careful reduction of the food. An important part of the treatment, however, at this stage is local treatment. The child must be restrained from scratching and rubbing by fixing down the hands, splinting the elbows, &c., but it is even more important to try to stop itching. This is best done by keeping the child at as even a temperature as possible and applying a face mask spread with Lassar's paste to which 3 per cent. crude coal-tar has been added. Sedatives, such as bromide and chloral, may sometimes be called for if sleep is much disturbed. The condition clears up in practically all the cases at the end of the first winter of life, even if treatment has not cured it before. The cases starting on the scalp almost always begin with slight scaly patches, sometimes occurring in rings, which run together and form a dirty scaly sheet over the vertex. Sooner or later the irritation set up by this causes the child to scratch, and by friction and secondary infection an eczematous eruption is produced. This may spread to the face and eventually involve other areas of the body. The original scaly patches are almost certainly produced by the bottle bacillus and luckily they can be readily dealt with by the application of weak sulphur and salicylic acid ointment (gr. xv. of each to ℥i.). It is possible, therefore, in the majority of cases to prevent eczematisation. If, however, this sets in, it is usually necessary to treat it on the lines laid down for the primary facial type. In these cases diet seems to have little or no effect on the production of the eruption.

*Rarer Conditions.*—These are the commonest eruptions met with in infants, but perhaps a reference to two other conditions, which may occasionally be seen, will not be out of place. We sometimes see infants with a group of *blackheads*, often associated with inflammatory papules or pustules, on the upper chest, chin, or cheeks. These are usually produced by rubbing in camphorated oil, but in some cases olive oil is the causative factor. The lesions subside slowly if the irritant is stopped. Occasionally we meet with infants with sharply defined large raised red swellings, often surmounted by a crust or studded with small pustules, situated on the face or limbs. These lesions are characteristic of a *bromide eruption*, and it must be remembered that it is often the mother who is taking the bromide and not the infant. The lesions subside slowly on discontinuing the drug.

### AFTER THE FIRST YEAR OF LIFE.

*Impetigo Contagiosa.*—The appearances of this eruption will be familiar to you. The earliest lesions are lentil- to pea-sized very thin-walled vesicles, which either rupture at once or become turbid if they persist for a few hours. When ruptured, the serum oozing from the base dries and forms a crust which may be transparent and amber-coloured or of a dirty greenish colour according to the number of leucocytes which exude. Occasionally the vesicles do not rupture early, but increase in size and form large blisters (*bullous impetigo*), or the lesions may spread at the edge and crust in the centre (*circinate impetigo*). The lesions are due to a surface streptococcal infection. In simple cases the treatment consists in carefully removing the crusts and applying a mild antiseptic ointment. Crusts can be removed either mechanically, by soaking in a weak lysol solution, by the use of warm olive oil, or, in cases where they are numerous and massed together, by starch poultices. It is best to apply the antiseptic in a stiff ointment, such as Lassar's paste, and 3 per cent. ammoniated mercury or yellow oxide of mercury are the most useful antiseptics to employ. In the bullous form lotions are more useful; the bullæ should be pricked, the fluid carefully mopped up, and 1 in 1000 acriflavin dressing applied and changed every four hours. Impetigo contagiosa has an unpleasant habit of attacking the folds behind the ears and below the lobules of the ear, the angles of the mouth, nose, and eyes. In these positions fissuring is apt to occur and healing is delayed. The principles of treatment are the same, but precautions must be taken to prevent the opening of these fissures. Thus, the ear must never be drawn out while dressing it, and, in the case of the mouth, it may be necessary to apply a piece of strapping to prevent the extreme corner of the mouth from opening. Impetigo in the region of the ear is often the starting-point of a *septic dermatitis of the scalp*, one of the most troublesome conditions we have to deal with in children. It would be beyond the scope of this paper to discuss the treatment of so chronic a condition, but efficient treatment of an impetigo may prevent this condition. Impetigo contagiosa is often secondary to other conditions and it is necessary to look for such. Thus, impetigo of the scalp is frequently due to pediculosis, of the ears to otorrhœa, of the mouth to nasal discharge, of the limbs to scabies and papular urticaria.

*Pityriasis Alba.*—This is one of the names given to those dry, pinkish, scaly, and sharply defined patches often seen on children's faces. Sometimes they are due to constant wetting of the face, as in children with adenoids, who dribble at night, possibly sometimes they are due to the use of irritating soaps, certainly in some cases they are low-grade streptococcal infections. In the former cases the cause must be removed; in the latter an ointment of 3 per cent. salicylic acid and 3 per cent. ammoniated mercury will usually cure.

*Urticaria Papulosa.*—This is a very common condition in young children. It sometimes commences in infancy, but usually in the second or third year. The eruption consists of erythematous patches, with a central pin-head to lentil-sized papule. The erythematous zone soon subsides, but the central papule, which itches intensely, is scratched and persists, surmounted by a small blood-stained scab. These scratched papules are chiefly seen on the extremities and lower part of the trunk. Not infrequently vesicles or even bullæ may develop, especially on the feet. The spots come out in crops, and may be more or less continuous or may be intermittent. They are much more common in hot weather. We know very little of the cause of this condition; it does not usually appear to be due to specific protein sensitiveness, but many cases clear up if the diet is modified. A considerable number seem to improve if sugar is cut down; a few are improved when specific articles of diet, such as eggs, porridge, bananas, &c., are excluded, but in general it may be said that treatment should be directed to carefully regulating the digestion and in seeing that the child is appropriately clothed. It is also well to satisfy oneself that the child is not suffering from worms. Local sedatives are of considerable value in these cases, tar baths and tar lotions being the most useful. In some cases a good deal of damage is done to the skin by scratching and small traumatic ulcers covered by adherent crusts form, chiefly on the lower limbs. To this type of lesion the name *ecthyma* has been given. Ecthymous lesions occur in other conditions besides papular urticaria where scratching and septic infection are combined; they are best treated by removal of the crusts and the application of a dressing spread with yellow oxide of mercury in Lassar's paste referred to under impetigo contagiosa.

*Scabies.*—This condition is the only one likely to be confused with papular urticaria. The scratch eruption on the extremities is sometimes very similar and the eruption of vesicles and small bullæ on the hands and feet may occur in both conditions. Scabies lesions, however, are apt to be much more pustular than those of urticaria papulosa and a good deal of independent impetigo is often seen in the former condition. The diagnosis rests, however, on the presence of acarine burrows, chiefly found on the hands and insteps in children. It is almost always possible to see, with a lens, the shiny white round body of the female acarus at the end of the burrow, and this can easily be removed with a needle for microscopical examination. In addition to the burrows, the upper limbs, front of the trunk and thighs, buttocks, and back of the thighs are generally covered with a fine follicular papular eruption, which shows signs of much scratching. Further, we often have a history of other cases in the house. It is important in cases of scabies to examine the parents or other relatives of the children affected. Quite a number of people have scabies and suffer from little or no itching; they are for practical purposes carriers. Unless these cases are located, reinfections are common. The treatment of scabies is well known.

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[*] THE LANCET, 1925, ii., 1333.

*Pediculosis.*—Pediculosis capitis is common in children and is usually symptomless, but is sometimes associated with impetigo. I find that the treatment recommended by Whitfield of tying up the hair for an hour in a hot 1 in 40 compress to be the most satisfactory treatment in out-patient practice. Rarely one finds the eyelashes of small children infected with pediculi pubis. The only treatment here is to remove the insects and their nits with forceps.

*Ringworm.*—The diagnosis and treatment of ringworm are such large subjects that one cannot adequately deal with them here. With regard to scalp ringworm, however, one or two points may be of interest. It is a good cardinal maxim, I think, to consider all scaly patches on the scalp of children, other than those of quite small infants, as ringworm until a careful examination has failed to reveal the evidence of this disease. In most cases proof is easily forthcoming if the patches are carefully examined for the stumps with a lens. In one of the rarer varieties of ringworm, however (viz., in one endothrix type), stumps may be very few and far between and not arranged in groups so as to show patches of hair thinning and the scurfiness may be very thick and very extensively distributed over the scalp. In these cases a prolonged search is necessary, and all suspicious hairs should be removed and microscoped. There is far too much ringworm of the scalp at the present time, and if it could be impressed upon parents that all scaly patches on the scalp should be examined by a doctor, a good deal of the disease would disappear. I am keenly sensible of the efficiency of the school doctors and nurses in getting hold of early cases, but if parents were also on the look out the cases would come for treatment still earlier.

To sum up, I think we may say that some skin conditions such as miliaria rubra and possibly urticaria papulosa may be prevented or modified by proper clothing, that much can be done in the prevention of napkin rashes and eczematous eruptions by careful toilet, and the avoidance of irritating soaps; that impetigo, pediculosis, and scabies can be avoided or modified by simple cleanliness, and this is especially applicable to the scalp, which is often much neglected. It is probable also that careful hygiene of the scalp would diminish and almost stamp out ringworm. Lastly, careful feeding will probably modify or even prevent certain types of facial eczema and some cases of papular urticaria.

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## CALVERLEY'S "ODE TO TOBACCO."

MR. E. L. Calverley, nephew of the poet, writes, apropos of the footnote on page 961 of our issue of May 22nd, that the statement about the "Ode to Tobacco" being wrongly attributed to C. S. Calverley, being really written by the two Miss Hodgkins is without foundation. The question was raised two years ago and definitely contradicted by the survivor of the two sisters—the widow of the Right Hon. Sir Edward Fry, Lord Justice of Appeal. In a letter to Sir Henry Newbolt she wrote that their ode did not resemble Calverley's.

## THE PROTECTION OF AN ARMY AGAINST VENEREAL DISEASE.

THE control of prostitutes and venereal disease in armies presents problems that have defeated many great commanders. After the war a particularly difficult situation had to be faced in the armies of the Rhine, and amongst the British troops there the venereal disease rate was two to four times as high as that of the Army generally. In the *Military Surgeon* for April Major M. A. Reasoner, of the American Medical Corps, gives an account of a somewhat original method for combating venereal disease which was adopted by the United States forces in Germany. Prostitutes, he says, were drawn to the occupied area from all Central Europe—even from Poland—and it was difficult to deal with them under German law. Venereal disease began to increase amongst the troops, and every effort had to be made to keep it down. All the usual measures were tried, education, athletics, prohibition of spirits and strong wines, frequent inspection, the offer of standard means of prophylaxis, the placing of registered houses out of bounds. But though all of them may have done good, Major Reasoner contends that the most useful was the institution of vagrancy laws. A vagrancy court was set up to deal with any persons not naturally domiciled in the American occupied area who were found without means of support; such persons were sentenced to terms of imprisonment, and the women were examined in prison for venereal disease. About one-third of them were found to be infected—generally with gonorrhœa—and these were sent at once to hospital, where they remained until they were cured. The great hospital for prostitutes set up by the United States at Bendorf, containing 300 beds, proved a blessing both to Germany and to the troops. Although complete statistics are not given, it seems certain that the amount of infection really was diminished. As for those men who did contract it, they were sent to a hospital on an island where they were kept by themselves until they were cured. Here they were taught to shoot, educated in soldiering, and thoroughly drilled; so that they returned to their units more efficient than when they left them.

## FIRST AID.

A SECOND edition, revised, of Questions and Answers in First Aid (pp. 21, 6*d.*), by F. G. Harwood (B.R.C.S. and J.A.A.), an epitomised companion to the St. John Ambulance Association Text-book, has just been issued by Messrs. John Bale, Sons and Danielsson, Ltd., and should prove useful to students as a means of summarising knowledge obtained in class and as a text-book for periodical revision. A few hints and suggestions for competition work are added. Another publication by the same author and firm is First Aid for Footballers and other Athletes. This is a 12-page folder, price 3*d.*, which outlines in a few words the treatment for injuries to football players and spectators, and is intended to serve as a reminder for ambulance or Red Cross students. The preface suggests that the folder may be used by "those who accompany teams, but who have not the time or inclination to undertake a complete course of study of this subject." Here we think a word of warning should be added because the instructions are so brief that harm might be done by someone attempting to follow them without previous training. Until the arrival of medical help inaction may be preferable to action, but this only the trained first-aider can know. With this reservation the folder can be recommended.

## SMALL-POX AND VACCINATION IN BIHAR AND ORISSA.

THE report of Lieut.-Colonel W. C. Ross, I.M.S., director of public health in Bihar and Orissa, records a considerable increase in small-pox mortality (0·2 per 1000), as compared with the figure for the previous year. No fatal cases were recorded from Angul district, but in the remaining 20 districts the death-rates varied from 0·01 in Palaman to 0·5 in Puri and 0·6 in Bhagalpur; in the rural districts there was a similar range. Colonel Ross remarks that "vaccination is neither compulsory nor free . . . . it would appear to be wise and proper to organise the work more effectively, and to make vaccination compulsory and free, in order to get the whole population protected, and thus abolish a disease which is, of all diseases, the most easily and cheaply preventable. The manufacturer of vaccine lymph and the organisation of staff for vaccination work are all at present arranged by Government, and facilities are available throughout the province for getting the operation performed by trained vaccinators with pure vaccine." In the resolution of the Ministry of Self-Government for the province dated Oct. 10th, 1925, which follows the public health report, it is stated that "the advantages of vaccination are not adequately realised, and the law only makes vaccination compulsory, not revaccination. Government can only hope that experience will dispel popular prejudice on this subject." The policy of "wait and see" is frequently the best, and, indeed, the only one that is practicable; it would seem, however, hardly appropriate in the present instance.

In a further report on vaccination, also presented by Colonel Ross, it is stated that 1,044,282 operations were performed "during the year 1924–25" (by which is apparently meant the 12 months ending March 31st, 1925); 990,571 were primary operations and 40,575 revaccinations; 97·42 per cent. were successful. Colonel Ross does not consider that small-pox can be effectively dealt with and stamped out unless vaccination is made compulsory throughout the province, and recommends "that the Vaccination Act should be modified so as to extend the age, within which vaccination is required, to 1 year, and should be generally enforced; that vaccination should be free, and that the supervision and control should be delegated to district boards and municipalities and their health officers." Experimental work in regard to loss of potency has established that "this is invariably associated with a development of an acid reaction in the vaccine. It was found that the quantity of pulp obtained was larger, and that the vaccine was potent when fresh, but developed an acid reaction more rapidly, even in cold storage, and became inert in a very short time when exposed to room temperature in warm weather."

# The Oliver-Sharpey Lectures
ON
# CARBOHYDRATE METABOLISM IN HEALTH AND DISEASE.

*Delivered before the Royal College of Physicians of London on May 4th, 1926,*

By HUGH MacLEAN, M.D. Aberd., D.Sc. Lond., M.R C P Lond,
PROFESSOR OF MEDICINE, UNIVERSITY OF LONDON; DIRECTOR, CLINICAL MEDICINE UNIT, ST. THOMAS'S HOSPITAL.

## LECTURE I.*

The subject of carbohydrate metabolism is of special interest, both from the point of view of the biological chemist and the physician. While the particular steps constituting the normal mechanism are of greater interest to the chemist, the breakdown of this mechanism gives rise to symptoms which are the special province of the clinician. It is chiefly from the clinical point of view that I wish to discuss the subject at present, but in order to get as clear an outlook as possible, it is necessary to mention briefly the present views on the fate of carbohydrate in the normal individual.

### Carbohydrate Metabolism in Health.

Under ordinary circumstances by far the greater part of our food consists of carbohydrate material taken in the form of starch. Whatever the nature of the starch may be, it is very quickly broken down in the gastro-intestinal tract and changed into glucose. As glucose it is absorbed into the circulation, to be finally oxidised and excreted in the form of carbon dioxide and water. In the healthy individual quite enormous amounts of starch can be ingested without any sugar being excreted in the urine. In some cases as much as 400 g. or more of glucose can be taken at one time without producing a trace of glycosuria, while the quantity of starch that can be ingested is very great indeed.

It is obvious that the normal body is exceedingly effective in dealing with carbohydrate, and that it is only when disease supervenes that any evidence of the excretion of ingested sugar is obtained. Of the various changes which sugar undergoes in the body we are more or less ignorant, and many of our present views are merely conjecture. Within recent years, however, some little light has been thrown on the subject, and though our knowledge is still very fragmentary and inconclusive, yet some very suggestive observations have been made. It is a curious fact that no matter how much carbohydrate is eaten, the amount of sugar in the general circulation is not increased except quite temporarily. Since sugar is utilised in the body and rapidly disappears as such from the tissues very soon after being taken, it is obvious that sugar must either be quickly converted into some other substance or that it must be equally rapidly destroyed as the result of the normal processes of oxidation.

### *Conversion of Sugar into some other Substance in the Tissues*

*Glycogen and Fat.*—It is well recognised that a large amount of the sugar ingested is stored in the body as glycogen. This storage takes place chiefly in the liver, but comparatively large amounts of glycogen are also found in the muscles. This glycogen-supply serves as a reservoir for the giving out of glucose when it is required for metabolism. That feeding with carbohydrate results in the formation of fat has been recognised for a very long time, but the general impression appears to be that this transformation of sugar to fat is a very slow one. All the available evidence points to the conclusion that once fat is formed it cannot be reconverted into sugar.

*Hexose-diphosphate.*—Many years ago Harden and Young showed that a combination of sugar with phosphoric acid was formed during the fermentation of sugar by yeast. Examination of this compound showed that it contained two molecules of phosphoric acid combined with one molecule of sugar.

$$\left.\begin{array}{l}\text{Phosphoric acid}\\ \text{Phosphoric acid}\end{array}\right\rangle \text{Sugar (hexose).}$$

The sugar obtained on hydrolysis of this compound was found to give the reactions of fructose. The importance of this phosphoric ester in the fermentation of sugar by yeast has been well recognised for a long time, but work carried out during the past few years has sufficed to establish the fact that in the metabolic processes of the muscle cell the formation of hexose-phosphate plays a no less important part. The detection of this substance in the animal organism is based on the work of Embden and his colleagues, who showed that when the fresh muscle-juice of a dog was left to stand, lactic acid very soon appeared. Naturally, for reasons which will be discussed later, it was thought that this lactic acid was probably formed from pre-existing glycogen or glucose, but it was soon established that no corresponding decrease of carbohydrate accompanied this formation of lactic acid. It was observed, however, that whenever lactic acid was formed, free phosphoric acid appeared, and that the amount of this phosphoric acid bore a very definite relationship to the lactic acid formed. Indeed, for each molecule of lactic acid there was found a molecule of free phosphoric acid. Now this is exactly what might be expected to happen if the mother substance was of the nature of the yeast hexose-diphosphate, for each molecule of hexose would form two molecules of lactic acid, at the same time liberating two molecules of phosphoric acid. It was proved, at any rate, that muscle-juice contained some forerunner of lactic acid other than glucose or glycogen, and to this substance Embden gave the name of *lactacidogen*. Subsequently, this product was isolated and shown to be identical with the hexose-phosphate obtained from yeast-juice by Harden and Young.

All recent work points to the conclusion that this tissue hexose-phosphate plays a most important part as an intermediate product in carbohydrate metabolism, and its formation appears to be an essential step in the breaking down of sugar. Though some suggestions have been made to the contrary, there is no evidence that its presence is necessary for the formation of glycogen from sugar.

### *Oxidation of Sugar.*

In discussing the various probable methods by which sugar might be broken down to its simplest products—carbon dioxide and water—it will be necessary to consider shortly the general structure of glucose. Glucose is a compound containing six carbon atoms; it consists *essentially of a* chain of five alcohol groups united to a terminal aldehyde group—CHO.

$$CH_2OH-CH.OH-CH.OH-CH\,OH-CH.OH-CHO.$$

All the evidence we possess at present points to the conclusion that during oxidation this six carbon chain splits up into two products, each containing three carbon atoms. It is probable, however, that this happens after the formation of the hexose-phosphate compound already described in which the sugar apparently exists in the *form of fructose*. The split of fructose into two substances, each containing three carbon atoms, is best represented by a cleavage in the position shown in the diagram.

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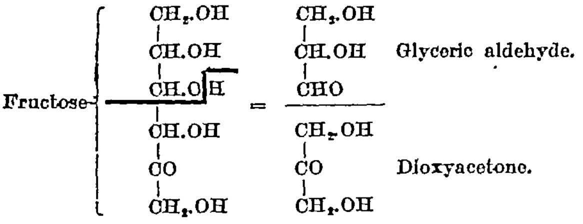
* Lecture II. will appear in a subseq t issue.

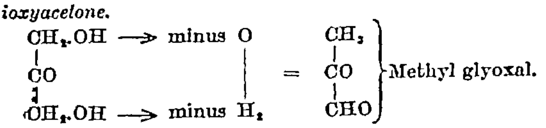
The two substances formed according to this view are glyceric aldehyde and dioxyacetone.



$$\text{Fructose}\left\{\begin{array}{lcll}
\mathrm{CH_2.OH} & & \mathrm{CH_2.OH} & \\
| & & | & \\
\mathrm{CH.OH} & & \mathrm{CH.OH} & \text{Glyceric aldehyde.}\\
| & & | & \\
\mathrm{CH.O|H} & = & \mathrm{CHO} & \\
\hline
| & & | & \\
\mathrm{CH.OH} & & \mathrm{CH_2.OH} & \\
| & & | & \\
\mathrm{CO} & & \mathrm{CO} & \text{Dioxyacetone.}\\
| & & | & \\
\mathrm{CH_2.OH} & & \mathrm{CH_2.OH} &
\end{array}\right.$$

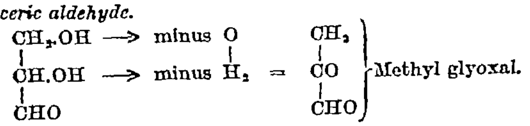
It will be noticed that the empirical formula $(C_3H_6O_3)$ of each of these substances is identical with that of lactic acid, and they can easily be transformed into lactic acid by a simple rearrangement of the atoms. By splitting off the elements of water from either glyceric aldehyde or dioxyacetone, a substance, methyl glyoxal, can be formed in each case, as may be seen from the following equations.

*Dioxyacetone.*



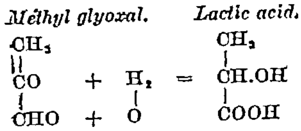
$$\left.\begin{array}{lccl}
\mathrm{CH_2.OH} \longrightarrow \text{minus O} & & & \mathrm{CH_3}\\
| & | & & |\\
\mathrm{CO} & | & = & \mathrm{CO}\\
| & | & & |\\
\mathrm{CH_2.OH} \longrightarrow \text{minus } \mathrm{H_2} & & & \mathrm{CHO}
\end{array}\right\}\text{Methyl glyoxal.}$$

*Glyceric aldehyde.*



$$\left.\begin{array}{lcl}
\mathrm{CH_2.OH} \longrightarrow \text{minus O} & & \mathrm{CH_3}\\
| \qquad\qquad\quad | & & |\\
\mathrm{CH.OH} \longrightarrow \text{minus } \mathrm{H_2} & = & \mathrm{CO}\\
| & & |\\
\mathrm{CHO} & & \mathrm{CHO}
\end{array}\right\}\text{Methyl glyoxal.}$$

By adding on the elements of water in a different manner to methyl glyoxal we arrive at lactic acid.



$$\begin{array}{lcccl}
\textit{Methyl glyoxal.} & & & & \textit{Lactic acid.}\\
\mathrm{CH_3} & & & & \mathrm{CH_3}\\
\| & & & & |\\
\mathrm{CO} & + & \mathrm{H_2} & = & \mathrm{CH.OH}\\
| & & | & & |\\
\mathrm{CHO} & + & \mathrm{O} & & \mathrm{COOH}
\end{array}$$

The above represents a theoretical scheme by which the change from glucose to lactic acid through the intervention of hexose-diphosphate may be represented. It is worthy of note that the various reactions suggested do not involve any oxidation of the original compound. In the classical experiment of Hopkins and Fletcher it was shown that the actual production of lactic acid in muscle was an anaerobic process. It is now necessary to consider what evidence there is that these theoretical changes actually take place in the body.

### *Evidence that such Intermediate Substances may occur in the Body.*

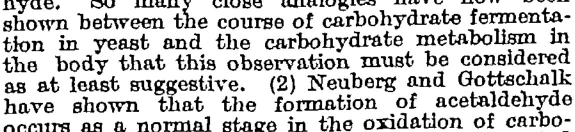
The proof that hexose-phosphate occurs normally in the animal organism has already been given. Convincing evidence was furnished by the experiments of Meyerhof that glucose added to minced muscle is converted into lactic acid *only in the presence of a solution of sodium phosphate.* The fact that the phosphate is essential for this change suggests the view that the formation of hexose-phosphate is a definite and essential link in the chain.

With regard to the probable presence in the animal body of methyl glyoxal, it is significant that an enzyme capable of transforming methyl glyoxal into lactic acid with extraordinary rapidity has been shown to be widely distributed in the tissues by Dakin and Dudley. These observers found that this enzyme was not present in the pancreas, and further made the curious observation that the pancreas contained a substance which inhibited the action of this enzyme. This fact is of some interest when we consider the important rôle played by the pancreas in carbohydrate metabolism. Such is the wonderful [illegible] that a crude aqueous extract of liver containing less than 1 g. of organic matter can form several grammes of lactic acid in the course of a few minutes. Under these circumstances it is obvious that the recovery of methyl glyoxal as such from the tissues could hardly be expected, for it would be immediately converted into lactic acid.

It has been clearly demonstrated by the work of Meyerhof that the glycogen of the tissues is the source from which lactic acid is formed, for according to this author the glycogen in muscle decreases exactly in proportion to the amount of lactic acid produced. A. V. Hill has made the fundamental observation that the heat produced when muscle contracts is evolved almost entirely during the relaxation of the muscle, and is caused by oxidation of a small proportion of the lactic acid produced during contraction, the remainder of the lactic acid being reconverted to glycogen. Apparently, we have, therefore, during muscular activity a reversible series of changes from glycogen to lactic acid and vice versa. In this series of changes hexose-phosphate seems to constitute an essential intermediate stage.

### *Oxidation of Lactic Acid.*

In the light of the above observations it seems fairly certain that lactic acid constitutes a definite intermediate product in the metabolism of sugar. It is known, however, as already indicated, that lactic acid can be completely oxidised in the muscles, and though it is not definitely proved that lactic acid must be always formed before complete oxidation of sugar takes place, yet there seems to be more support for this view than for any other. Until quite recently there was really no evidence as to the nature of the intermediate products derived from lactic acid, but the suggestion was advanced that lactic acid might change into pyruvic acid, and that the latter, by splitting off $CO_2$, might furnish acetaldehyde, which would then be further oxidised to water and carbon dioxide. The following formulæ represent these changes:—

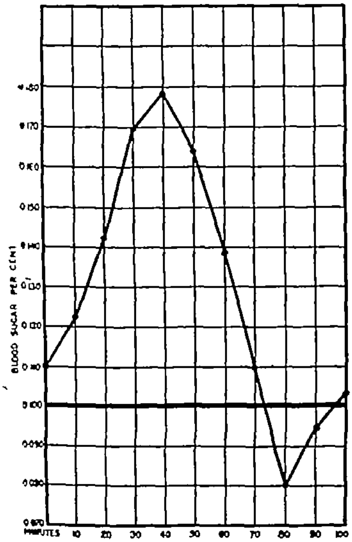


$$\begin{array}{lclcl}
\textit{Lactic acid.} & & \textit{Pyruvic acid.} & & \textit{Acetaldehyde.}\\
\mathrm{CH_3} & & \mathrm{CH_3} & & \mathrm{CH_3}\\
| & & | & & |\\
\mathrm{CH.OH} \longrightarrow \text{minus } \mathrm{H_2} & = & \mathrm{CO} & = & \mathrm{CO}\\
| & & | & & |\\
\mathrm{COOH} & & \mathrm{COOH} \longrightarrow \text{minus } \mathrm{CO_2} & & \mathrm{H}
\end{array}$$

Two pieces of evidence have now been adduced to substantiate this view: (1) Neuberg has demonstrated the presence of an enzyme in yeast which liberates $CO_2$ from pyruvic acid, forming acetaldehyde. So many close analogies have now been shown between the course of carbohydrate fermentation in yeast and the carbohydrate metabolism in the body that this observation must be considered as at least suggestive. (2) Neuberg and Gottschalk have shown that the formation of acetaldehyde occurs as a normal stage in the oxidation of carbohydrate by muscle, and have actually isolated acetaldehyde from the tissues. More than this we cannot say. It is obvious that the gaps in the mechanism of carbohydrate metabolism still require a good deal of filling up, and that a good deal of what has been said above still rests on insufficient evidence. On the whole, however, the work of the last few years has done much to lay more solid foundations on which the future investigator may hope to build with success. The next point to consider is the variations which take place in the blood-sugar of normal and pathological subjects. Without some knowledge of these changes it is quite impossible to appreciate many of the more important facts concerning diabetes and glycosuria.

### THE AMOUNT OF SUGAR IN THE BLOOD.

It is now well recognised that under ordinary circumstances the blood-sugar content varies from time to time. This variation depends chiefly on the ingestion of carbohydrate. Apart from the temporary influence of food, the blood-sugar concentration is wonderfully constant, and in man is roughly about 0·1 per cent. When, however, starch or sugar is taken in sufficient amount, the blood-sugar quickly rises, and in 30 to 45 minutes reaches a maximum value varying from about 0·16 to 0·18 per cent. It matters little whether ordinary glucose or some starchy material is taken. Within a very short period there appears this marked rise in blood-sugar content. This quick response indicates that the hydrolysis of starches in the gastro-intestinal tract must be an exceedingly rapid process. The changes in blood-sugar can be well studied by giving 50 to 60 g. of glucose dissolved in a few ounces of water and estimating the blood-sugar at frequent intervals. Very often the maximum concentration of blood-sugar is reached within 30 minutes after the ingestion of the glucose. From this point onwards the blood-sugar steadily falls, until in an hour or an hour and a half it again regains its normal level of 0·1 per cent. Indeed, not infrequently it actually sinks to a lower level than this, and after remaining at this low level for a short time quickly returns to the normal. Though slight variations of this phenomenon occur in different individuals, the general result is more or less as described. A blood-sugar curve obtained from a healthy individual is represented in the diagram here shown.



A normal blood-sugar curve.

Now it is quite easy to understand why the blood-sugar should rise after taking starch or sugar by mouth. There is an increased absorption of sugar from the intestine into the circulation, and consequently a definite increase in blood-sugar would be expected. It is much more difficult to explain why this rise should be so quickly succeeded by a sudden fall. It might be argued that the bulk of the sugar had already been absorbed when the curve reaches its maximum, and that the fall in blood-sugar was simply an indication of this fact. That this is not the case is obvious for various reasons. It can be shown that when the curve has regained the normal level there may still be plenty of sugar in the stomach, and that absorption may be going on rapidly with the blood-sugar as low as 0·08 per cent. or so. Also, this sudden fall does not take place in the diabetic subject. It is therefore certain that when the curve begins to fall, some mechanism comes into play by which the absorbed sugar is removed from the blood. What is this mechanism? The question is a difficult one, but there are various possibilities. The sugar might be rapidly oxidised by the tissues. No doubt this factor plays a part in reducing the blood-sugar, for experiments show that there is an increase of oxidation of carbohydrate at this stage as indicated by the respiratory quotient rising to 1. It is possible, however, to calculate the maximum amount of sugar that could be destroyed in an individual from the time that sugar is ingested until the blood-sugar returns to normal. It is quite certain that the amount of sugar destroyed during this period accounts for but a small part of the total sugar absorbed. Again, it would be a most wasteful method that would destroy all the sugar immediately on its being absorbed. Indeed, it is very probable that actual destruction of sugar by the tissues plays but a small part in the rapid reduction of blood-sugar after a carbohydrate meal, for there are many patients who show normal powers to oxidise sugar, and yet give a typically abnormal curve.

No doubt gradual dilution of the sugar in the stomach has some effect, for Goldblatt has shown that when 50 or 60 g. of sugar are taken in a litre of water the blood-sugar does not rise to any appreciable extent. If the sugar is not destroyed the only possibility is that it is quickly converted into some other substance and stored as such. This is really what happens. When the blood-sugar reaches a certain concentration a mechanism comes into play which removes the sugar from the blood and stores it in the form of glycogen. This mechanism continues to act until the blood-sugar regains its normal level, however actively the absorption from the intestine is going on. Now it is well known that the chief depôts of glycogen are the muscles and liver. For various reasons it is my opinion that the chief site of this storage is the liver. This statement is based largely on clinical observations which indicate that whenever the liver cells are diseased or abnormal, the reduction of blood-sugar after a carbohydrate meal fails to take place in the usual way, or is very markedly interfered with. There is every reason to suppose that formation of glycogen in the muscles also plays some part, but it appears to be a subordinate one.

What happens therefore when carbohydrate is taken in sufficient amount is that the glucose passing into the liver by the portal system is at first allowed to pass through into the general circulation, but that after a time, when the blood-sugar reaches a certain concentration, the liver begins to hold back the sugar and to store it into the liver cells in the form of glycogen. The result is that the peripheral blood-sugar quickly falls. It is certain that the internal secretion of the pancreas (insulin) must play a definite part in this mechanism, but how it acts is at present far from clear. It might be argued that the initial increased concentration of sugar in the blood acts as a stimulus to the pancreas, and causes it to secrete insulin which is responsible for the phenomenon. There are some difficulties in accepting this view. Lævulose, for instance, is apparently stored in the liver immediately, for it does not raise the blood-sugar concentration. It is therefore difficult to see how this sugar can stimulate the pancreas, since it apparently never enters the general circulation; also it is apparently stored before any stimulation of the pancreas would have time to secrete the necessary insulin. Hewitt has shown that lævulose is more slowly absorbed from the intestine than glucose, but rate of absorption plays practically no part in preventing a rise in blood-sugar, since lævulose causes a marked rise in the diabetic subject.

Since lævulose is immediately changed into glycogen on absorption into the portal system, it is possible that glucose gradually becomes changed into some isomeric substance having a structure closely allied to that of lævulose, and that it is this substance which the liver changes into glycogen. If it is true, as generally claimed, that the sugar of animal hexose-phosphate is lævulose, this fact might lend some support to the above idea.

Some years ago evidence was brought forward in favour of the view that the sugar present in the tissues of the normal individual was really not ordinary glucose, but an isomeric form more reactive than glucose—so-called $\gamma$ glucose. This view has not been confirmed. In this connexion it was shown by Tallermann that the sugar excreted in the urine of the normal individual as the result of phloridzin administration was apparently ordinary glucose. Presumably this sugar passed in the urine must have possessed the same structure as the blood-sugar from which it was derived.

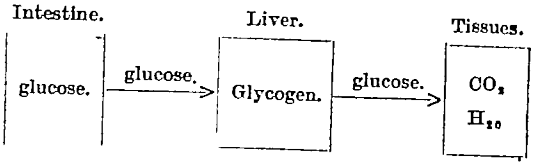
### THE RENAL THRESHOLD FOR SUGAR.

In ordinary circumstances practically no sugar passes from the blood into the urine as long as the blood-sugar concentration remains below a certain figure. In the average individual the kidney begins to let sugar pass whenever the blood-sugar content rises to 0·18 per cent. or so. It is an interesting fact that it is practically impossible in health to raise the blood-sugar to this point however much sugar or starch is eaten. Whenever the blood-sugar begins to approach this so-called threshold line the storage mechanism above described comes into action and prevents the sugar from reaching the critical point. But since no excretion of sugar by the kidneys takes place until the threshold is exceeded, it follows that glycosuria can only be produced with the very greatest difficulty, if at all, in the perfectly normal individual. There is really no such condition as the "alimentary glycosuria" of the text-books. Generally speaking, it does not matter how much sugar is absorbed, for the normal liver is capable of dealing with very large amounts, and so prevents the blood-sugar from rising sufficiently high to overflow into the urine. From this it is obvious that under ordinary circumstances, when a patient has glycosuria, his blood-sugar must at any rate be as high as 0·18 per cent.

In some subjects this threshold is placed at a much lower level, and occasionally it may even be below the normal blood-sugar value of 0·1 per cent. In these cases sugar passes into the urine whenever the blood-sugar rises to the concentration constituting the altered threshold. In other words, sugar leaks through the kidney constituting the condition known as *renal glycosuria*. This abnormality, which is now recognised to be so important from the clinical standpoint, will be discussed later. From this brief discussion of the changes which normally take place in blood-sugar concentration we may now pass on to a consideration of diabetes.

### "DIABETES."

Though one of the most striking features of diabetes is the presence of sugar in the urine, it must not be forgotten that diabetes indicates a breakdown in the metabolism not only of sugar, but of protein and fat as well. Unfortunately, in clinical work the term *diabetes* is used to include at least two entirely different conditions with the result that much confusion prevails. It is often stated that diabetes in the young is a much more serious condition than diabetes in the middle aged and elderly. This, however, does not appear to be strictly true. Typical diabetes is equally severe at whatever age it appears. How, then, are we to account for the well-known clinical fact that many elderly patients may pass sugar in the urine for years without any ill-effects, while glycosuria in the young is a much more severe malady? The answer seems to be that this chronic glycosuria of the elderly subject is not really diabetes at all. To understand the position fully it will now be necessary to consider the mechanism by which glycosuria is produced. When sugar is absorbed from the intestine it first passes into the liver and, as already shown, it is to a large extent stored there in the form of glycogen. When required the glycogen is reconverted into sugar and is ultimately oxidised by the body tissues. These points are indicated in the diagram.



Now it is obvious that marked glycosuria might be caused by (1) failure of the liver to convert the absorbed sugar into glycogen, or (2) failure on the part of the tissues to oxidise sugar. Either or both of these factors acting together would result in a marked hyperglycæmia with consequent glycosuria. In true diabetes, definite evidence of defective oxidation can easily be obtained. Thus ingestion of sugar in the diabetic subject does not generally cause an increase in the respiratory quotient such as is observed in the normal individual. Again, the diabetic subject shows evidence of defective fat oxidation as indicated by the presence of ketone bodies in the urine. In many elderly individuals with very marked glycosuria no evidence of defective oxidation of either sugar or fat can be obtained. No ketone bodies, or at most only traces of these substances, are present in the urine. These points indicate that there must be some fundamental difference between the glycosuria of the elderly individual and true diabetes. What is this difference? Many observations point very strongly to the view that this chronic glycosuria is largely dependent on the inability of the individual to store sugar in the liver. This results in an increase of sugar passing into the blood and giving rise to glycosuria. It seems certain that the power to store sugar may be very largely lost, while the power to oxidise sugar may be apparently quite efficient, and it is this lack of power to store that accounts for the so-called chronic diabetes of the elderly subject. This conception explains many puzzling clinical features such as the lack of definite symptoms so often observed. Nutrition is well maintained, and though the condition is generally called diabetes, it should really be differentiated from true diabetes.

### *Cause of Defect in Storage.*

Everybody is now agreed that normal carbohydrate metabolism is dependent on the secretion of insulin by the pancreas, and the wonderful effects of insulin in the treatment of diabetes lend ample support to this view. There seems no doubt whatever that true diabetes arises from a disturbance in the pancreas resulting in an insufficient supply of insulin to the organism. On casual consideration we might suppose that lack of storage of sugar is also necessarily connected with some pancreatic defect, but this is by no means quite clear. If defective storage were always due entirely to an insufficient supply of insulin, it is strange that patients showing marked glycosuria and with very little power to store sugar, frequently go on for years and years without showing any evidence whatever of the slightest defect in oxidation. It might be thought that in severe cases of this type of glycosuria some evidence of definite oxidation would be obtained if storage and oxidation of sugar were entirely dependent on the same factor. The clinical evidence, indeed, strongly supports the view that whatever part the pancreas may play, there is another factor present which is of very great importance. This factor seems to be connected with some change in the liver. At present our thoughts and ideas are so centred on insulin that we are liable to forget that the metabolism of sugar in the body requires not only insulin, but a specially organised tissue through which insulin acts. Insulin alone will neither oxidise sugar nor convert it into glycogen;

another factor is necessary which is inherent in the tissue itself. Now it is very probable that under certain circumstances the tissue cells may lose, to some extent, their power to form glycogen, even when the normal amount of pancreatic secretion is available. It is a striking clinical fact which has been noted again and again, that the glycosuria of the elderly subject is very frequently associated with some pathological changes in the liver. I am not unmindful of the fact that such hepatic changes may often be associated with pancreatic changes as well, but, for the reasons already given, pancreatic changes by themselves hardly account for the condition. The most reasonable view to take, in the light of our present knowledge, is that the so-called chronic diabetes of the elderly subject is associated with some changes in the liver, and that whatever part the pancreas plays in this connexion, a pancreatic lesion is not the sole and probably not the most important factor. The condition generally referred to clinically as diabetes may therefore be classified under two types: (1) hepatic glycosuria (the chronic diabetes of the elderly subject), and (2) true diabetes.

### *Hepatic Glycosuria of Elderly Subjects.*

Though the glycosuria present in this condition is often very marked and intensive, it frequently happens that practically no other symptoms are found. When the malady has persisted for a considerable period, certain symptoms frequently appear, but they are usually of a somewhat different nature from those associated with typical diabetes. Thus, there is little or no acidosis and no tendency to coma. Not only is nutrition in general well preserved, but patients are often abnormally fat. Sometimes, however, the large loss of sugar results in some decrease of weight. In this type of case the symptoms that may arise appear to be definitely dependent on the excessive amount of sugar in the blood.

The most important results of this hyperglycæmia are: (1) local irritation; (2) cramps and pains in the joints; (3) neuritis; (4) eye changes; and (5) general weakness and mental irritability. Of all these symptoms, local irritation produces, perhaps, the greatest discomfort, especially in women. The continued irritation sometimes experienced is so intense that patients have been known to commit suicide. Cramps and pains are often very troublesome, and may be so severe as to be mistaken for the pains of locomotor ataxy. In all cases, therefore, in which severe pains of doubtful origin are present it is well to examine the urine. Neuritis is, unfortunately, very common. Eye changes may be so extensive as to lead to actual blindness, and general muscular weakness may be well marked. It is safe to say that none of these symptoms can be ameliorated unless steps are taken to reduce the excessive blood-sugar. When this is done it is wonderful how some of these ailments disappear in a comparatively short time. I have known a patient who had suffered with very severe pains in his legs and shoulders for over two years, and, who for some weeks before treatment, was reduced to a pitiable state owing to suffering and lack of rest at night. On giving him a suitable diet all the pains entirely disappeared within ten days. The result of treatment is not always so dramatic as this, but perseverance generally has its reward in these cases. The onset of eye symptoms always suggests immediate and persistent treatment.

### *Prognosis in Hepatic Glycosuria of the Elderly.*

Very often the condition goes on for 20 years or more without getting much worse, and the patient dies of some other disease. Frequently, after a certain number of years, some of the symptoms just mentioned develop to such an extent that definite treatment becomes necessary. In a few cases, after many years of harmless glycosuria, the patient more or less suddenly develops the usual symptoms of typical diabetes. He wastes rapidly and loses weight; the urine, which was formerly free from ketone bodies, now contains large amounts of acetone with diacetic and oxybutyric acids; his condition becomes grave and coma threatens.

How are we to explain this sudden change? I think that the most rational view is that the persistent hyperglycæmia had after many years worn out the pancreatic islet tissue with the result that the necessary amount of insulin ceased to be secreted. It has been abundantly proved by the work of Allen that continued high blood-sugar tends to exhaust the pancreas and cause diabetes. In these cases of prolonged glycosuria in the elderly, the wonder is that the pancreas is not worn out more frequently than is actually the case. The fact that marked hyperglycæmia continuing for many years does not usually exhaust the pancreas to the point at which ordinary diabetes supervenes, seems to me to be another proof that a primary pancreatic defect is not the chief factor in this form of diabetes. Indeed, it might be argued that in these cases the special islets of the pancreas are particularly healthy to begin with, and therefore very resistant to the detrimental effects of hyperglycæmia.

If we remember the above distinctions between the diabetes of the elderly individual and true diabetes, it helps us to get a rational view of the position. When true diabetes occurs it is as acute in the elderly as it is in the young, but since true diabetes is probably always associated with a pancreatic defect, its development must often mean that the pancreatic islets were fundamentally weaker than normal to begin with. Naturally, such weakness would be likely to show itself in youth; if a subject lives to an advanced age without showing any evidence of diabetes, this, of itself, signifies that he must have inherited a sound pancreas. Any defect would almost certainly have been found out early in life. It is thus obvious that true diabetes is more likely to develop in the young, while diabetes at the other end of the scale is more likely to show itself after a considerable strain on the pancreas from hyperglycæmia. The glycosurias of the elderly are not diabetic at all, and in the light of what has been said there is no reason to believe that true diabetes is not equally severe at all ages.

In the next lecture I shall discuss renal and other forms of glycosuria, acidosis, the diagnosis of diabetes, diet in diabetes, and some experiences with insulin.

### REFERENCES.

Dakin, H. D., and Dudley, H. W.: Biol. Chem., 1913, xiv., 321; xv., 463; xvi., 505.
Embden, F., and Laquer, F.: Ztschr. Physiol. Chem., 1914, xciii., 94; 1917, xcviii., 181.
Fletcher, W. M., and Hopkins, F. G.: Jour. Physiol., 1907, xxxv., 247.
Goldblatt, M. W.: Personal communication.
Harden, A., and Young, W. J.: Alcoholic Fermentation, Monographs on Biochemistry, third ed. (Longmans, Green and Co., London).
Hewitt, J. A.: Biochem Jour., 1924, xviii., 161.
Hill, A. V.: Ergeb. Physiol., 1916, xv., 340.
Meyerhof, O.: Pflüger's Archiv. ges. Physiol., 1920, clxxxv., 11; 1921, clxxxviii., 114.
Neuberg, C., and Gottschalk, A.: Biochem. Ztschr., 1924, cli., 169.
Neuberg, C., and Karczag, L.: Biochem. Ztschr., 1911, xxxvi., 68.
Tallerman, K: Biochem. Jour., 1924, xviii., 533.

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WELLCOME HISTORICAL MEDICAL MUSEUM.—The Museum at 54A, Wigmore-street, W., was partially reopened on June 1st, but the work of reorganisation is still proceeding with a view of making the collections more accessible for inspection and study. The museum is open to members of the medical profession, chemists, pharmacists, nurses, and research workers generally from 10 A.M. to 5 P.M. on week days, Saturdays 10 A.M. to 1 P.M.

RAILWAY CONCESSIONS TO CZECHO-SLOVAKIAN SPAS.—Visitors to the various Czecho-Slovakian spas and health resorts will be granted a special reduction of 50 per cent. on the cost of their railway journeys within the Czecho-Slovak Republic. In order to secure this concession, which supersedes all previous arrangements of this kind, visitors must remain for at least ten days in any one spa, where they should apply to the spa administration before starting on their return journey.

# Presidential Address

ON THE

# PRESENT POSITION OF CHLOROFORM.

*Delivered before the Scottish Society of Anæsthetists at Dundee*

BY ARTHUR MILLS, M.D. ST. AND.,

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DOUBTLESS we have been slow in this district to accept the view that the administration of anæsthetics is work requiring special skill and experience, for it is only within very recent times that the staff of anæsthetists in our hospital has been adequately increased. There are now six anæsthetists, a number sufficient to overtake practically all the work that is being done. I fear, however, that a long time may yet lapse before there will be a like demand for the services of the anæsthetist in private practice. Strange as it may seem, many a doctor still holds the opinion that "anyone can give chloroform." The economic factor, too, is, I fear, strong enough to perpetuate the old custom, and we may accept the fact that for some time to come many private patients will be anæsthetised by comparatively inexperienced administrators. It is with this fact constantly in mind that I have framed the views and opinions which I am about to express.

## CONFLICTING VIEWS AS TO CHLOROFORM.

Frequently in the past the value of chloroform as an anæsthetic has been discussed. In 1919 Dr. Paton Boyd took this subject for his presidential address and severely criticised the extreme attitude of the American anæsthetists. The Committee of Anæsthesia of the American Medical Association reported in 1912 that the use of chloroform was no longer justifiable, and that its use for minor operations should cease, but that it was sometimes of convenience for inducing anæsthesia in alcoholics or in difficult cases. In some places it would appear that chloroform has been entirely discarded. During 1923 17,813 anæsthesias were administered at the Mayo Clinic, and chloroform was not used on a single occasion.

Are we prepared to define clearly our own views on this important subject? When that report was issued by the American Medical Association in 1912 chloroform was practically the only anæsthetic used in Dundee and the surrounding district for all ordinary operations; indeed, we were not asked to give an anæsthetic, we were asked to "give chloroform." Though many practitioners now realise that there are certain limitations to the use of chloroform, and that other and safer anæsthetics are available, others persist in the belief that, provided with nothing but chloroform, they are justified in proceeding to induce and maintain anæsthesia wherever and whenever general anæsthesia is required. Chloroform deaths thus still take place, and by "chloroform death" I mean a very definite form of fatality. I suggest that our knowledge of the pharmacological action of chloroform and other anæsthetic drugs is now such that these deaths are avoidable, and that we as teachers of anæsthetics are responsible for inculcating better and safer methods. Such methods, however, must be simple, and not associated with the use of complicated apparatus, if they are to be adopted by the practitioner desirous of giving an anæsthetic only when the necessity arises in his own practice. Some such simple method I shall attempt to describe, but before doing so I should like to discuss briefly the manifest contra-indications to the use of chloroform.

## CONTRA-INDICATIONS TO THE USE OF CHLOROFORM.

Chloroform, of course, possesses certain obvious advantages. It is a powerful anæsthetic and easy to administer. A few cubic centimetres of chloroform administered on a towel or piece of lint are sufficient to produce anæsthesia. It is non-irritating to the respiratory passages and is pleasant to inhale. It produces a quiet type of anæsthesia and no undue congestion of the incised parts.

The dangerous effects of chloroform fall into four groups: (1) depression of the respiratory centre; (2) fall in the blood pressure; (3) late toxic effects—delayed chloroform poisoning; (4) chloroform syncope—death occurring very suddenly, usually, but not invariably, in the stage of induction.

I have not mentioned these groups in the order of their importance, the most important one being group 4, which I should prefer to discuss last.

(1) Chloroform has a depressant effect upon the respiratory centre. It dulls this centre's sensitivity to its normal stimulus from carbon dioxide. During anæsthesia the amount of carbon dioxide produced in the body is considerably reduced, and if at the same time the centre become less sensitive a condition of anoxæmia may result from deficient ventilation of the lungs. This danger is further increased by the fact that chloroform also reduces the oxygen-carrying capacity of the red corpuscles. Depression of the respiratory centre is usually of gradual onset and manifests itself in an unmistakable manner. The careful and observant administrator rarely permits the condition to become serious. Moreover, depression of the respiratory centre is not an effect peculiar to chloroform. The other anæsthetic agents have a similar action, but in less degree. It cannot thus be regarded as a factor of sufficient importance entirely to contra-indicate the use of chloroform.

(2) Chloroform in full anæsthetic doses causes a fall in blood pressure, and this fall is roughly proportionate to the depth of anæsthesia reached. The low blood pressure resulting from chloroform anæsthesia is similar in nature to that of surgical shock. It is not due to failure of peripheral resistance, for the arterioles are in a state of constriction. It is due to an imperfect filling of the heart in diastole and consequent diminished output into the arterial circulation with a stagnation of blood in the splanchnic area and in the capillaries. A tame rabbit suspended by the ears passes into a state of shock and dies. This condition of gravity shock is much more easily produced in the chloroformed animal than in the animal which has not been chloroformed, and is the more easily produced the more deeply the animal is anæsthetised. It has been shown that quantities of histamine too small to produce any effect upon a normal animal cause a marked fall of blood pressure when injected into an animal after prolonged chloroform anæsthesia. The histamine-like bodies produced when tissues are injured are believed to be the chief cause of shock, so that this action of chloroform in increasing the susceptibility of the tissues to histamine will also account for its predisposing to shock. Chloroform is thus strongly contra-indicated in cases where the patient is already suffering from a low blood pressure. In this respect patients suffering from shock or who are in a gravely debilitated condition are unsuitable subjects for chloroform anæsthesia.

(3) Post-anæsthetic toxæmia may follow the administration of any anæsthetic, but is much more frequent after chloroform. The condition is also known as delayed chloroform poisoning, and its symptoms are familiar to all of us. It is much more common in children than in adults, and toxæmia and starvation are powerful predisposing factors. It is a condition of acid intoxication comparable to that met with in diabetes, salicylate poisoning, and recurrent or cyclic vomiting. Acidosis or acid intoxication is due to the presence in the circulation of an abnormal amount of substances of the acetone group, and this excess may be due to too rapid formation or to too slow elimination,

or to both. Acetone bodies are the result of increased fat metabolism, which again is a result of the diminution in the carbohydrate metabolism. Elimination is performed by liver and kidneys, and deficient elimination results from damage to liver and kidney cells. Starvation and constipation and anæsthesia increase fat metabolism and increase acetonæmia. Septic absorption and chloroform damage liver and kidney cells. Clinically we find that the child who is suffering from a septic abdomen and who has had little or no food for a few days prior to operation is the most susceptible of all patients to post-anæsthetic acidosis. Chloroform is absolutely contra-indicated in these cases. It is also contra-indicated in the case of children known to suffer from cyclic vomiting. Such children may have a severe and fatal attack precipitated by a very short administration of chloroform. There is no evidence that chloroform produces an increased acetonæmia more readily than does ether. In this respect anæsthesia and asphyxial conditions are closely related. There is, however, strong evidence that chloroform, by its toxic effect on the liver and kidney cells, is much more dangerous than ether, and the acetonæmia produced is maintained and aggravated through deficient elimination. Beely, in 1906, referring to work in the Children's Hospital in Edinburgh, reported that "out of 10 cases of acute appendicitis operated on under chloroform 14 died; out of 24 cases operated on under ether only 2 died, and that not as the result of acid intoxication."

### DANGERS DURING THE INDUCTION PERIOD.

(4) The large majority of chloroform deaths (80 per cent. or more) take place during the induction period. The victim is not infrequently a robust adult male. As an example of what may be regarded as a typical chloroform death, I quote the following case:—

> The patient was an ex-soldier, 53 years of age, who had had 30 years service abroad. He was of spare muscular frame, arteries hard, chest somewhat emphysematous and rigid, heart sounds could only be faintly heard, but his general condition was good. The operation intended was stretching the sciatic nerve. Anæsthesia was induced with chloroform on an open mask. The stage of excitement was very prolonged with violent struggling, spasm of the muscles, irregular respiration, and some cyanosis. Suddenly there was general muscular relaxation and the breathing lost its spasmodic character. The anæsthetic was at once withdrawn. Then followed a few deep regular respirations, but the breathing soon became shallow and stopped, the pupils being widely dilated and the complexion of a livid hue. No pulse could be felt at the wrist and the heart sounds were inaudible. Attempts to resuscitate the patient failed.

It is obvious that the patient's heart had suddenly ceased to beat and respiration only stopped after the respiratory centre had failed from want of blood.

I believe that I am correct in stating that a similar sequence of events never takes place when ether is the anæsthetic employed. Of a series of 33 chloroform deaths which I have investigated I find that at least 21 were of this nature. Such deaths are due entirely to the misuse of chloroform, and should cease to take place if our teaching is sound and is honestly followed. Of the several rival theories advanced to account for these sudden chloroform deaths, two only appear to me to be of value and to be more or less supported by clinical experience. Violent excitement in the induction stage will be admitted by all to be a frequent precursor to a catastrophe. In the series of cases investigated this state of excitement was emphasised in the report in 12 out of the 21, and may, of course, have occurred in others. Pohl found in a dog which had been killed by a few breaths of concentrated chloroform vapour that the blood in the left ventricle contained 0·2 per cent. chloroform, whilst that in the right ventricle contained only 0·02 per cent. He suggested, therefore, that in many cases death was caused as follows. During the stage of excitement and irregular spasmodic respiration the patient first held his breath and allowed chloroform vapour to accumulate under the mask; then he took a deep breath inhaling a concentrated chloroform vapour which passed into the blood and went direct to the heart and coronary arteries. In this way a toxic action upon the heart was produced long before the other tissues of the body were saturated with the drug. This theory would appear to fit in with a number of reported cases and could reasonably be applied to 12 or more of my series of 21. Levy, on the other hand, maintains that this theory has no experimental support, and states that high percentages of chloroform administered to animals are incapable of producing sudden stoppage of the heart. The matter would appear to require further investigation.

### VENTRICULAR FIBRILLATION AS A CAUSE OF CHLOROFORM DEATH.

In 1889 MacWilliam brought forward a new view as to the causation of sudden death by a previously unrecognised form of failure of the heart's action—namely, a condition of sudden ventricular fibrillation. It would appear to be not only a common cause, but the usual cause of sudden and unexpected death of cardiac origin, such as we meet with in cases of angina pectoris, sometimes after operations, and frequently where no pathological condition was suspected, but the individual is engaged in some form of violent exercise. Such deaths also frequently accompany or follow some emotional state. Ordinary cardiac or myocardial failure is a progressive exhaustion of the contractile power of the cardiac muscle and death is then by no means sudden. Sudden loss of contractile power does not occur. When ventricular fibrillation supervenes, on the other hand, we have a sudden disastrous change occurring in a cardiac muscle that may have been showing no symptoms of ordinary cardiac failure. There is an abrupt replacement of the effective systole by a continuous incoördinated activity in the muscular fasciculi, so that some are contracted and others relaxed, the result being a mere quivering of the ventricular walls with complete loss of any expulsive power. The result to the organism is the same as that of absolute stoppage of the heart's action. Unlike auricular fibrillation ventricular fibrillation is promptly fatal.

As the exciting cause of this condition MacWilliam emphasises muscular exertion, and especially when associated with emotional excitement. Sudden deaths of this nature take place during or very shortly after exertion. Muscular effort involves an increased demand upon the heart. Emotional excitement does the same. The amount of work that the heart is called upon to do per minute is enormously increased. There is an increased force and frequency of the heart beat, and the blood pressure is raised, giving a greater resistance. Conditions producing a susceptibility to ventricular fibrillation are tabulated by MacWilliam as follows: Altered nutritive conditions in the heart muscle as in coronary obstruction; toxic agencies such as typhoid fever and diphtheria; certain chemicals such as digitalis, barium salts, many other chemical compounds, and chloroform. The relation of chloroform anæsthesia and susceptibility to ventricular fibrillation has been worked out both by MacWilliam and by Levy, more particularly by the latter, and on the main points these two workers are in practical agreement. They have demonstrated that in healthy animals, cats particularly, a great susceptibility to ventricular fibrillation may be established by the administration of chloroform. Chloroform produces the state of susceptibility, and fibrillation is then easily produced by various forms of stimulation of the heart. Levy further insists that light anæsthesia is an essential condition, and that under deep anæsthesia a fatal result cannot be obtained. The forms of stimulation that produce fibrillation are: cutting the vagal trunks in the neck, the injection of one minim of 1 in 1000 adrenalin into a vein, direct excitation of the sympathetic nerve-supply of the heart, the stellate ganglion or the accelerator nerve, and stimulation of the cut ends of sensory nerves. Extreme deprivation of oxygen may have a similar effect. Furthermore, ventricular fibrillation may be initiated during a fit of struggling in a cat under light chloroform anæsthesia, comparable in all respects to the familiar stage of excitement and struggling in the human subject.

Levy constantly lays emphasis on the lightness of the anæsthesia which is required in these experiments, and insists that the heart is more susceptible under light chloroform anæsthesia than under deep anæsthesia. It is difficult to believe that a low percentage of chloroform in the blood can do more harm to the heart than a higher percentage. To produce the state of ventricular fibrillation it is evident that there must first be a condition of susceptibility and then an exciting cause. May it not be possible that in deep chloroform anæsthesia the heart is more susceptible but the exciting cause is absent? We know that chloroform is a powerful cardiac depressant, and that in every case where it is administered the contractile power of the heart is weakened and its walls dilate. A call upon the heart under these conditions to beat with greater force and frequency means an enormous extra strain, for the force required to empty its ventricles increases as the cube of the radius. Stimulation might thus only excite fibrillation if that stimulation succeeded in producing an effort on the part of the weakened heart to beat with greater force and frequency. If the anæsthesia be deep it is conceivable that excitability of the heart would be so depressed with chloroform that it would make no effort in response to a stimulus, and the fatal disturbance to its action would not then take place. Levy's work is interesting, and I think of great value, but his manner of application of his results to practical anæsthetics is unfortunate. His teaching is entirely at variance with clinical experience. He constantly emphasises the danger of light chloroform anæsthesia, yet he does not define what he means by "light chloroform anæsthesia." The use of the expression "death due to light chloroform anæsthesia" is in my opinion unjustifiable. It conveys, moreover, the wholly false and dangerous doctrine that safety would have been found in giving more chloroform.

One must admit on study of the writings of these two workers that they have established strong evidence in favour of ventricular fibrillation being the cause of these sudden chloroform deaths. One must also conclude, however, that Levy's or, indeed, anyone's "principles of the safe administration of chloroform" are futile, and that it is quite impossible with our present knowledge always to render safe the administration of this drug.

I take it, therefore, that our teaching must be that the use of chloroform as an anæsthetic agent is not justifiable: (1) In cases of grave debility with low blood pressure, and more particularly in cases where the patient is suffering from shock. (2) In cases likely to develop acidosis, the most susceptible being the diabetic, the sufferer from the septic abdomen (the more especially if the patient be a child), and children who are the subjects of cyclic vomiting. (3) In a great many cases during the induction period.

Unlike our friends in America, I would not countenance its use during the induction period in alcoholics and difficult cases. Alcoholics and difficult cases are just those cases where a fatal result is to be looked for if chloroform be so employed. We must deal with our alcoholics and our difficulties in some other way. We must impress upon our students that to continue to administer chloroform to an excited and struggling patient cannot be made a safe proceeding, and that it is unnecessary, and therefore unjustifiable. We must teach our students other and safer methods.

### A Simple Method for General Use.

Possibly cases of labour offer the one exception to a rule which I believe should be strictly adhered to, and that rule is—that no one should proceed to produce full surgical anæsthesia supplied only with the means of administering chloroform. As a routine method suitable for the general practitioner and house surgeon to use, and combining simplicity with safety, I advocate induction with the drop bottle and mask, and as a minimum of equipment, the administrator must be provided with chloroform and chloroform mask, ether and ether mask, a container of ethyl chloride of the type for general anæsthesia, and the usual tongue forceps, prop, and so forth. As we have seen, cases will be met with where chloroform is absolutely contra-indicated at any period in the administration. He should therefore be able to induce and maintain anæsthesia with ether alone by the open method, and should understand the value of previous medication with atropine and morphine. When not so contra-indicated chloroform can be administered with advantage up to the second stage, a change being made to the ether mask and ether as soon as the first sign has appeared that the stage of excitement has been reached. Full anæsthesia must be induced now with ether, aided, if necessary, by the addition of a little ethyl chloride on the ether mask. Chloroform must not be resumed till full anæsthesia has been reached, and only then if the nature of the operation favours a chloroform anæsthesia. The administrator will in the induction period frequently find it advantageous to change from chloroform to ether before the stage of excitement has been reached; he must never be tempted to delay the change after that stage has been reached. I do not hesitate to recommend this method, and for the following reason: its simplicity is obvious, and no cumbersome or perishable apparatus is required. I have never observed any alarming effects to accompany the administration of chloroform in a dilute and gradually strengthened vapour up to the stage indicated. Such a procedure has much to be said in its favour. Chloroform is a more pleasant vapour than ether to inhale. The sense of smell is quickly lost and the upper respiratory passages soon become dulled and less sensitive to the irritating effects of the pungent ether vapour which is to follow. In this way we eliminate a distressful experience for the patient, and we frequently avoid the coughing and salivation which are so prone to accompany the earliest stages of induction with ether. The safety of this method has been confirmed to my satisfaction over a period of eight years, comprising about 25,000 administrations.

### Mortality Statistics.

I have studied the reports of deaths under an anæsthetic occurring in the Dundee Royal Infirmary from 1904 to the end of 1923. I chose this period because 1904 appears to have been the first year that records were preserved, and the end of 1923 marks the end of that period when anæsthetics were given very largely by the house surgeons. Thereafter the staff of anæsthetists was very much augmented, and the records accordingly cease to have the same significance. The results of this investigation not only confirm the views which I have expressed, but justify me in continuing to inculcate the doctrines which I have laid down. From 1904 to 1916, when full induction with chloroform was the rule, the death-rate was 1 in 910 cases. From 1917 to 1923, when the methods I have described were largely followed, the death-rate was 1 in 7400 cases. Moreover, the deaths occurring in this latter period, three in number, would probably have been avoided had the administrator been able to proceed according to the newer teaching.

The reports number 43. In 10 cases the report definitely stated that death was due to some cause other than the anæsthetic. In several instances this was undoubtedly the case, as, for example, when death took place from hæmorrhage from the superior longitudinal sinus. In others the opinion was not so apparently well founded. When it was stated, for example, that death was not due to the anæsthetic but to the shock of the operation, and chloroform was the anæsthetic in use, one feels inclined to attribute to the anæsthetic some share, at least, in the production of the state of shock. In the majority of these 10 cases it was, however, obvious that the patient was moribund before the anæsthetic was administered. We are thus left with a series of 33 cases where, according to the report, death was due to the anæsthetic. Chloroform was the anæsthetic in 20, and a mixture of chloroform and ether in 4. Twenty-one were due to chloroform syncope in the stage of induction, the occurrence of excitement and struggling being emphasised in 17 of these. In 2 cases the Vernon Harcourt inhaler was being used; 5 were due to chloroform syncope during the operation; 4 were due to chloroform producing or contributing to a state of shock. The anæmic condition of the patient previous to operation was emphasised in three reports. Three reports were much too vague to permit of forming a definite opinion. In no case could death be attributed to a pure depression and final arrest of the respiratory centre. No statistics regarding delayed chloroform poisoning could be obtained.

In arranging my facts concerning the pharmacological action of chloroform I have borrowed freely from the following works: MacLeod's "Physiology and Biochemistry in Modern Medicine," Clark's "Applied Pharmacology," Levy's "Chloroform Anæsthesia," and Hewitt's "Anæsthetics and their Administration."

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# THE PATHOLOGICAL ACTION OF LIGHT UPON THE EYE.

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## PART I.*—ACTION ON THE OUTER EYE: PHOTOPHTHALMIA.

THE acute inflammatory reaction of the superficial parts of the eye to short-waved light, called photophthalmia by Parsons in 1913, has been known and recognised from very early times; Xenophon, in his Anabasis (iv., 5) mentions one of its forms—"snow-blindness." Its first mention in scientific literature seems to have been by Faucault in 1843, and from the medical point of view it would appear to have received its first adequate notice from Charcot, who, in 1858, detailed the distressing experience of two chemists, who, "after making some experiments on the fusion and vitrification of certain substances by the action of the electric battery . . . found in their eyes a feeling of severe irritation that evening and during the whole night, which they passed without sleep." After the general introduction of the electric arc for furnaces and lighting in 1879 the occurrence of the typical symptoms became quite recognised, and to-day they are probably to be met with most commonly as an accident among those who work clinically and experimentally with ultra-violet rays, or who are subjected to exposure to the short-circuiting of a high tension electric current, or any other source rich in short-waved light. The earlier writers, attaching much importance to the functional visual disturbances which usually accompany such exposures, attributed the inflammatory trouble to reflex or sympathetic influences from the retina (Terrier, 1888; Martin, 1888), but in his classical experimental researches in 1889 Widmark established the ætiology of the disease as we now recognise it, and, correlating the experimental and industrial troubles with those met with under natural conditions as in "snow-blindness," he showed that the common cause was the shorter ultra-violet waves.

### *Pathogenesis.*

The experimental production of photophthalmia has been studied amongst others by Birch-Hirschfeld, Parsons, Martin, and Verhoeff and Bell, whose findings have been largely confirmed by the writer, working under the direction of Leonard Hill.

The biological action of light upon the eye, as elsewhere in the body, varies with the wave-length; the longer waves, by increasing molecular movement, produce mainly a thermal effect, the shorter ones, whose frequencies correspond to the intra-molecular oscillations, by increasing atomic motion, produce molecular disintegration, with consequent photo-abiotic, photochemical, and photoelectrical changes. Unless radiant energy is absorbed it can exert no effect, pathological or otherwise, upon the substance through which it is passing; it is therefore with the light that is absorbed by the cornea that we are concerned.

The absorption of the cornea has been studied by a large number of investigators, whose results agree so closely that the matter may be considered as settled. The cornea, apart from radiations at the extreme end of the energy spectrum (electrical oscillations), completely absorbs heat waves longer than 20,000 Angström units; below this in the infra-red, part are absorbed and part are transmitted, the amount of the latter increasing until at 7500, just at the commencement of the visible reds, practically all are transmitted; thereafter, throughout the entire visible spectrum, it is almost completely transparent, the small amount of absorption which exists being determined largely by the lamellæ and the corpuscles causing internal reflections and refractions. This obtains down to the region of 3150 in the ultra-violet, when absorption again becomes considerable, the process becoming complete at about 2910. The lines of demarcation are not sharp, and the limits vary to some extent between individuals, and to a greater extent, and probably exponentially, with the intensity of the incident radiation, but for all practical purposes the lower limit of transmission may be taken as at 3000 A.U. Transparency again occurs at the extreme lower limit of the known spectrum, in the region of wave-lengths of the order of one A.U. (X rays, gamma rays). The absorption of the conjunctiva corresponds to that of the skin; all incident energy within the limits of the spectral range of ordinary sources is absorbed very rapidly, the abiotic rays being completely absorbed at a depth of about 0·1 mm., the heat effect of the luminous waves penetrating to the submucous tissues.

The rays producing symptoms of photophthalmia are the shorter ultra-violet. Theoretically energy of any wave-length should be able to produce some degree of abiotic action, but in living tissues any very slight and slowly produced changes that the longer waves may effect are either made good by the process of physiological repair or are masked by a preponderating thermal effect. A critical threshold both of wave-length and of intensity of radiation therefore exists. It has been established by the use of suitable filtering screens of graded degrees of transparency that the limiting wave-length which is able, in the intensities usually employed experimentally, to produce an inflammatory effect upon the cornea and conjunctiva is 3050 A.U. (Verhoeff and Bell). The effect in this region, however, is very small, and to cause any marked reaction radiation must be employed in considerable intensity and over a long period of time; *for all practical purposes it is the rays below 3000* which are responsible for exciting the condition, the most potent being those from 3000 to 2500. This corresponds with the limits of sensibility of the skin, as determined by Leonard Hill, Hausser, and others. Above this critical limit all the incident energy which is absorbed is converted into heat, producing when in quantity sufficient to cause pathological changes, a *thermal effect. This effect* as far as the cornea is concerned, on account of its great transparency, is practically negligible for all ordinary intensities of radiation throughout the visible spectrum, until we come to the infra-red.

Since the disturbance is the direct result of the absorption of energy, not only is there a critical wave-length, but there is also a very definite critical quantity of effective energy required to set up a reaction, and the knowledge of its magnitude is of importance in deciding the dosage appropriate for the local treatment of diseased conditions. In the rabbit an exposure of 2·5 minutes at a distance of 0·5 metres from a quartz mercury lamp (K.B.B., atmospheric pressure running at 200 volts, 3 amps.) is required to produce definite signs of conjunctivitis and stippling of the cornea; this represents a total abiotic energy incidence, expressed in biological units (Hill and Eidinow), of approximately 2 I.K. (infusoria killing) units, or about 2,000,000 erg-secs. per square centimetre. Allowing for slight variations due to individual idiosyncrasies—thus blonde people are usually more susceptible than dark—the human eye is more sensitive than that of the rabbit, a difference which may in part be due to the more ready elicitation of subjective symptoms. An average exposure under the same conditions of slightly less duration induces slight symptoms (i.e., a dose of approximately 2 I.K. units), which again corresponds with the minimum dose found by Hill and Eidinow to be necessary to produce the faintest appreciable erythema on the skin.

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* Parts II. and III. will appear in subsequent issues.

The degree of reaction varies, moreover, with the intensity of the energy involved. Thus with a source of uniform intensity it varies, within limits, directly as the time of exposure, and inversely as the square of the distance of the radiating source from the eye. In this way an exposure of ten minutes under the above conditions produces a very marked conjunctivitis in rabbits, and after 15 minutes there is complete desquamation of the corneal epithelium, while the effects at 0·5 metre correspond in degree to those received in an exposure of four times the duration at 1 metre. Further, the effect of repeated exposures with intermissions is the same as their equivalent as a single long exposure, always provided that the time interval between them is not of duration so long that the factor of physiological repair comes into play. Up to 24 hours the effect of repeated exposures may thus be considered additive.

The relation to the intensity of energy is also seen in the site of the lesion on the cornea; in mild cases it is always central, in severe cases the greatest pathological changes are in the central region, and they progressively diminish in degree as the periphery is approached. This is due to the fact that the rays falling normally on the centre of the cornea are more concentrated that those falling slightly obliquely at the periphery, where the effect is therefore more spread out—the relation being comparable to the proportionate heat of the midday and evening sun. Further, some energy is always lost by reflection at the air-cornea surface, and the amount thus lost is a function of the angle of incidence, varying as its cosine (Lambert's law); the greater the angle of incidence—that is, the more obliquely the incident rays strike—the greater the loss by reflection, and the smaller the quantity absorbed. For these two reasons the intensity of absorbed energy per unit area diminishes progressively from the centre to the periphery, and the lesions are preferentially central.

### *Pathology.*

The pathological findings in a moderately marked lesion caused by ultra-violet light from a water-cooled mercury-vapour lamp as seen in the rabbit's eye are characteristic. There is a latent period usually of six to eight hours, which varies directly with the length and intensity of the exposure, during which no changes can be made out either macroscopically or microscopically. Thereafter in the slighter cases there is merely a stippling of the cornea with irregularity of its reflex and sometimes vesicular formation, accompanied by hyperæmia of the conjunctiva. After greater exposures the central corneal epithelium is desquamated and stains diffusely with fluorescin; still greater exposures leave a diffuse central interstitial haze, or a marked central opacity usually with sharply defined margins. The conjunctiva shows a considerable amount of inflammation with marked swelling and œdema, associated with a muco-purulent discharge. The changes are at their height in 48 hours, and thereafter gradually die down, the rate of recovery again varying directly with the intensity on the radiation. In three to five days after a moderately severe exposure the epithelium has reformed, and on clinical examination the eye appears normal. An opacity, if one has been formed, becomes highly vascularised in six to eight days, and tends to clear up to a surprising degree in four to six weeks, leaving a translucent interstitial haze.

A lesion due to the longer heat rays, on the other hand, is quite different. These were studied as produced by exposure to a bare carbon arc, the ultra-violet being screened off and the light at the same time being concentrated by a glass lens of 0·75 cm. thickness. This eliminates the greater part of the abiotic wave-lengths, and any pathological action is therefore a thermic effect. Here there is no latent period, discomfort is felt at once unless the cornea is cocainised, and both macroscopical and microscopical changes are induced immediately. There is no stippling of the cornea and no impairment of its surface or susceptibility to stain. In the whole of its thickness it looks sodden and cloudy, and an opacity forms almost immediately, while a conjunctivitis in much more marked degree than is the case under a corresponding abiotic radiation is very soon evident, accompanied by much chemosis and œdema and a frankly purulent discharge.

Histological examination also shows a typical picture. In the abiotic lesion, corresponding to the degree in which the rays are absorbed, the degree of pathological changes decrease in severity from without inwards through the thickness of the cornea, and gradually tails off towards the periphery. In the central region, 48 hours after moderate exposures, the surface epithelium is completely absent, and with it some of the more superficial corneal lamellæ have disappeared; more peripherally the outer epithelial layers only have exfoliated, leaving the basal cells spread out and spaced apart; further, towards the periphery the epithelium is normal. The lamellæ near the affected area are swollen and stain less readily with eosin, while the corpuscles show nuclear fragmentation and the cytoplasm becomes granular and eventually disappears, the entire cell disintegrating. There is massive eosinophile-celled infiltration—an appearance so evident as to be very striking. Descemet's membrane and the endothelium remain normal. Histological examination 10 to 15 days later shows no appreciable effects.

The conjunctiva shows histologically desquamation of the outer layers of the epithelial cells, while the basal cells are degenerated and spread out. There are small hæmorrhages, much congestion, and polymorphonuclear and plasma cell infiltration, and the subepithelial connective tissue shows hyaline degeneration. The secretion in the acute stage contains eosinophile cells.

The histological picture is quite different in a lesion due to the thermal action of visible and infra-red rays. The surface epithelium, cooled by contact with air, is intact, and, conversely to the abiotic reaction, the lesion increases in severity as the distance from the surface increases, the endothelium being completely destroyed in the central region. The corneal lamellæ are much swollen and have lost their structure in the central region, where the corpuscles are completely destroyed. The edges of the lesion are sharply defined, and are surrounded by an area of cell stimulation and proliferation, and in the periphery there is much leucocyte infiltration.

### *Clinical Symptoms.*

Photophthalmia, as it is met with clinically, is accompanied by a very characteristic symptomatology. There is always a latent period whose length varies with the intensity and duration of exposure; for ordinary exposures it lasts about six or eight to ten hours, and the unpleasant effects therefore usually start during the evening or night following. With extreme experimental intensities of exposures the latent period has been reduced to 30 minutes, and it would seem never to have exceeded 24 hours—the factor of physiological repair apparently counteracting the abiotic effects of radiation of intensity so weak as to necessitate a longer latent period than this. The first symptom is a sensation of slight pricking as of a foreign body in the eye, which in the mildest degrees of the trouble is all that may develop. After moderately intense radiation, as in the usual doses accidentally received, this is followed by considerable disturbance rapidly increasing to pain, accompanied by extremely marked photophobia, profuse lacrymation occurring often in crises, and blepharospasm, while an hour or two later ciliary neuralgia often develops. Meantime the eye becomes red and injected, exceptionally chemosis develops, and the pupillary reflexes are often delayed, while on the surrounding area of the skin of the face there is invariably some degree of erythema. On the whole, however, the objective signs lag behind the subjective symptoms. In the acute stage the cornea shows irregularity of its reflex, and if stained with fluorescin will be found to be stippled or to assume a diffuse slight central haze. The most distressing symptom is the blepharospasm, which, coming on as it usually does in the middle of the night, reduces the patient, as the writer knows from personal experience, to a peculiarly miserable and impotent condition. It is essentially a reflex protective mechanism, the lids closing tightly and involuntarily over the damaged cornea denuded of its epithelium and with its nerve terminals exposed, just as do the abdominal muscles over an inflamed peritoneum. The least attempt at movement, or the incidence of light increases this reflex spasm and brings on an acute paroxysm of pain, and to remain still under these conditions is no easy matter. For the ordinary exposures received accidentally the acute symptoms last from six to eight hours, and most of the discomfort has disappeared in 48 hours; with more severe exposures they may last for some days. A certain amount of injection and photophobia usually persists for some time, and if there is already present a chronic infection in the conjunctival sac it may, by superadding itself, keep up inflammatory symptoms of greater or less severity. After severe exposures some headache and slight visual disturbances may persist for weeks.

An actual thermal lesion is rarely met with under corresponding conditions, since, owing to the immediate response of the tissues to this portion of the energy spectrum, the discomfort will not be tolerated, and the eyes and head are turned away and thus protected. It does, however, frequently occur in momentary exposures to sources of sufficiently high intensity. Thus a lightning flash, or the flash of the short-circuiting of a high-tension current, contains a large proportion of infra-red rays, and if near enough will readily produce a "power burn," which is very often a heat effect, although an abiotic reaction is frequently present also. Symptoms come on immediately without any latent period, and the signs of external inflammation are much more marked than in the case of an abiotic reaction. There is great injection, chemosis, and almost always a frankly purulent conjunctivitis; it lasts in great severity for several hours, but, apart from any gross tissue damage that has been caused, the symptoms clear up more quickly than in the case of a lesion due to short-waved light. In the short-circuit flash the permanent tissue damage that may occur comprises haziness of the cornea (Rivers, Terrien, Lundsgaard), and an actual burn of the conjunctiva, usually accompanied by a similar burn on the face (Rivers, Terrien, Desbrière, and Bargy). Similarly, Silex, Vossius, Rivers, Dunbar Roy, and Le Roux and Renaud have noted corneal injury after a lightning flash. The energy involved in both of these is more than sufficient to exceed the threshold we have already seen to be necessary to produce an effect; thus that emitted from a short circuit involving 100 kilowatts is of the intensity order of $30 \times 10^6$ erg-secs. per square centimetre at 0·5 metre distance, and according to the estimate of Lodge the energy involved in a lightning discharge may be $10^{20}$ ergs. That such cases occur only rarely clinically is due to the fact that the discharge does not often occur sufficiently nearly and yet leave the individual free from actual electric effects, which mask the milder photophthalmic symptoms by causing lesions of a very much graver nature or even death.

### *The Occurrence of Photophthalmia.*

The typical course of an acute attack of photophthalmia as described above refers principally to the effects of exposures to the mercury-vapour lamp or a naked arc as it occurs, usually accidentally, in the laboratory or the clinic, but, within limits, it may be taken to apply to all similar conditions where short waves constitute the greater part of the radiated energy. Such exposures are fairly frequently incurred both industrially or under natural conditions.

(*a*) *Industrial Photophthalmia.*—Arc lamps have frequently given rise to photophthalmia, especially when they are being tested photometrically. A similar occurrence is met with in those exposed to the flash of a short circuit or to the emanations from molten metal in electric welding. In cinema studios a large quantity of photographically active light is necessary, and this is usually made up of two types: "soft lighting," which is obtained from "banks" of mercury-vapour lamps, and "hard lighting," derived from arcs used in searchlights. In this country in 1920 these were used unscreened, and the actors and actresses exposed to them suffered from alarming photophthalmic symptoms. Although no obvious trouble occurs when these are screened by glass, as they are always now, it is to be remembered that such a screen, while cutting off rays under 3000 A.U., transmits those above this, and the 3020 line in the mercury arc spectrum is of considerable intensity. While at the working distance this is not in intensity sufficient to cause photophthalmia, it is not improbable that with exposures lasting intermittently for years some more insidious damage might be caused in the inner eye, as will be considered in the later articles of this series.

(*b*) *Photophthalmia under Natural Conditions; Solar Photophthalmia.*—Owing to the absorption of ozone in the outer atmosphere the lower limit of solar radiation reaching the earth is 2910 A.U. Although the atmosphere appears to be more permeable to the shorter waves in extreme cold and the amount of the shorter waves penetrating it varies considerably, the percentage of rays between 3050 and 2910 is comparatively small and probably averages only 0·25 per cent. of the total solar energy (Abbot). Ordinarily, therefore, the sun-light does not produce symptoms of photophthalmia; when, however, the direct light is reinforced by a dazzling reflection in sufficient intensity from a surface of great extensity as the sea, the desert, or a snow-field, and an exposure of several hours to this doubled source is experienced, the critical threshold of abiotic energy may well be exceeded and symptoms of photophthalmia develop. The commonest form met with is that experienced after exposure to bright sun-light on a snow-field—usually called "snow-blindness—a thoroughly unsatisfactory term, since the photophthalmic symptoms are not caused by the snow but by the solar energy partly reflected from the snow, neither is there any blindness apart from dazzling and occasionally amblyopia and a central colour scotoma which may incidentally accompany the typical photophthalmic symptoms. A large literature has accumulated on the subject of solar photophthalmia, and its effects on mountaineers and explorers are well known, while the Eskimos suffer from it to a considerable extent (Daland). Neither are animals exempt, the polar bear *sometimes being a victim (Rossi). The trouble is* usually a mild one, and comes on after exposures lasting several hours. The typical symptoms already described are experienced after the usual latent period. In those living in these regions perpetually a chronic form is often encountered.

Although ordinarily the abiotic radiation present in the energy spectrum of the sun does not exceed the liminal threshold for producing pathological effects on the outer eye, cases have been reported of individuals who appear to have been abnormally sensitive—as, for example, that of a woman (Syme) who got an erythematous eruption on the face and injection of the eyes on every particularly bright day in summer. Such a reaction appears akin to the action of a sensitiser, and may be due to the presence of some substance of this nature in the blood of these people; it is, however, rare (compare hydroa æstivale).

### *Chronic Photophthalmia.*

A chronic form of photophthalmia was produced experimentally in rabbits by Birch-Hirschfeld, by exposing their eyes for ten minutes daily for 180 days to a mercury-vapour lamp. After the usual symptoms of acute photophthalmia had passed off the lesion which developed was a chronic mild conjunctivitis of the follicular type, the appearance of the conjunctiva, which was everted during the exposures, resembling very closely the typical picture of vernal catarrh.

Chronic photophthalmia of a somewhat similar nature is met with industrially (Behr) in welders and others who are frequently exposed to light sources emitting short-waved energy, and is usually accompanied by visual disturbances and an increased sensitiveness to light. The term usually applied to the condition—ophthalmia electrica chronica—is a misnomer, since electricity has nothing at all to do with the matter. The occurrence of solar photophthalmia in the chronic form has already been mentioned; it was first described as "keratitis solaris exfoliativa" by Kilkowe. Its occurrence is widespread wherever there is snow over a large part of the year; Gardner and Strader note it in America, Berlin and Enval in Scandinavia, Kilkowe and Gnonin in Central Europe, Reich in the Caucasus, Shomey in the Australian Alps, and Daland in Alaska, Siberia, and the Arctic Ocean. Infiltration and often ulceration of the cornea occur, resulting eventually in permanent impairment of the cornea with a band-shaped opacity running transversely, corresponding to the palpebral aperture as it is narrowed by approximation of the lids to avoid as much as possible the distressing glare from the snow. In all these places the natives have learned to protect themselves, some of the more primitive adopting correspondingly primitive devices; thus the Eskimos wear "glasses" made of a piece of wood or horn strapped round the head with a thong in which are cut two horizontal or vertical stenopœic slits opposite the eyes, through which the snow can be viewed with impunity, just in the same way as the sun is examined in eclipse with comfort through a pin-hole.

Owing to the similarity of the lesions produced experimentally by Birch-Hirschfeld to the appearance of the changes in the conjunctiva in vernal catarrh, the presence of eosinophile cells in both lesions, the fact that the incidence of this disease is limited largely to the hotter months of the year and the warmer countries, and its ready amelioration by bandaging the eyes, the hypothesis was advanced that it was a form of chronic photophthalmia due to short-waved light (Schiele, Kreibeich); and Junius suggests that its incidence may be determined by the presence of a sensitiser akin to hæmatoporphyrin in the blood. Vogt, on the other hand, suggested that the infra-red was the pathogenic factor. Although its ætiology has not yet been definitely cleared up, it is more than probably due to an infective agent; the resemblances mentioned are all superficial, and that it is certainly not due to ultra-violet light is seen in that it occurs almost exclusively underneath the upper lid, which cannot be reached by these rays in any circumstances, only very rarely on the lower lid, which might occasionally and with difficulty be reached, and almost never on the bulbar conjunctiva, to which these rays always have ready access.

### *Treatment.*

The treatment of photophthalmia is properly prophylactic; it is in the great majority of cases an accident or the result of carelessness in omitting to wear protective glasses on all occasions where exposure to short-waved radiations is possible. The fact of the liminal energy threshold has already been noted, and very short exposures to the sources in common use are therefore harmless, but it is to be remembered that short exposures are additive within a period of 24 hours. Widmark first showed in 1889 that the clinical symptoms were prevented by a plate of ordinary glass 0·5 cm. thick, and for exposures of ordinary intensity and short duration a pair of ordinary spectacles affords sufficient protection. With severe or prolonged exposures, however, it is found that ordinary glass will allow the transmission of waves capable of producing a violent reaction. This substance may be taken to absorb rays shorter than 3000 A.U., but we have seen that abiotic activity is obtained in the cornea up to 3050, and the 3020 line in the mercury-vapour spectrum is well marked. Moreover, for those continually exposed, the distressing glare is peculiarly trying without a considerable screening effect. A very large number of proprietary glasses have from time to time been put on the market to meet the case, most of them as commercial propositions, few of them with anything particular to recommend them. For purposes where it is wished to screen off the ultra-violet alone, Crookes' A glass is the most efficient. Where it is desirable that the visibles should be partly cut off, as usually applies to those conducting a clinic, or to those exposed to the glare from snow, &c., Crookes' B gives the best results, although ordinary smoked glass gives almost as much protection. None of these cut off the infra-red, and where these are to be excluded Crookes' sage-green glass eliminates 95 per cent., while as cutting off both ends of the spectrum, and toning down the luminous region, Pfund's gold-plated glass (American Optical Co.) is very effective and still permits of good illumination. This is made up of a very thin layer of prepared gold placed between a lens of ordinary crown glass and one of Crookes' A. The crown glass merely serves to protect the gold; the layer of gold reflects 98 per cent. of the infra-red and allows up to 75 per cent. of the luminous waves to pass, and the Crookes' glass absorbs the ultra-violet.

When once the attack has developed little can be done to reduce the distressing severity of the symptoms. Bromide and aspirin control the neuralgia, the former being well taken prophylactically after an accidental exposure. Cocaine in oil, locally administered as drops, reduces the corneal discomfort, and bandaging (not shading) the eyes, preferably with cold compresses, reduces the blepharospasm, especially if resorted to from the very beginning. Usually, however, this does not by any means relieve it and the accompanying paroxysmal pain; in such cases the most effective measure is to immerse the head in cold water, a procedure which gives great, though only temporary, relief.

### *Bibliography to Part I.*

Abbot: Astrophys. Jour., xxiv., 3 and 197, 1906.
Behr: Arch. f. Ophthalm., lxxxii., 509, 1912.
Berlin: Nord. med. Arch., xx., 3, 1888.
Birch-Hirschfeld: Arch. f. Ophthalm., lxxi., 573, 1909; Med. Klin., xxx.–xxxiii., 1910; Zeit. f. Augen., xxi., 358, 1909.
Charcot: Compt. rend. de la Soc. de Biol., 63, 1858.
Crookes, W.: Phil. Trans. Roy. Soc., A., ccxiv., 1, 1914.
Daland, J.: Ophthal. Record, xxvi., 116, 1917.
Desbrière et Bargy: Annals d'Ocul., cxxxiii., 118, 1905.
Enval, vide Widmark: Skand. Arch., v., 281, 1893.
Faucault: Bull. de la Soc. Phil., 1843.
Gardner: Amer. Jour. of Med. Science, 1871.
Gonin, J.: Annal. d'Ocul., cxx., 1908.
Hausser und Vahle: Strahlentherapie, xiii., 1923.
Hill and Eidinow: THE LANCET, April 15th, 1925, p. 317.
Junius: Arch. f. Augen., lxxxviii., 1, 1920. See also Gonzalez, J. de J., Anal. de la Soc. Mex. de Oftalm., iv., 109, 1924.
Kilkowe: Wiener med. Woch., April 21st, 1906.
Kreibich: Wiener klin. Woch., 673, 1904.
Lundsgaard, K. K. K.: Klin. Monat. f. Augen., l., 501, 1906.
Martin: Annal. d'Ocul., c., 25, 1888.
Martin, E. K.: Proc. Roy. Soc., B., lxxxv., 310, 1912.

(*Bibliography continued at foot of opposite page.*)

# THE AFTER EFFECTS OF DIPHTHERIA ON THE HEART

BY JENNER HOSKIN, M.D. CAMB.,
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IT has been recognised for many years that diphtheria has a serious effect on the neuro-muscular mechanism of the heart in a certain percentage of cases, and fatty degeneration of the heart muscle was described by Bristow as long ago as 1850. Other early investigators were Trousseau and Bretonneau, who noted the symptoms of those patients with diphtheria dying from heart failure.

In a report based on the diphtheritic cases admitted to the Philadelphia Hospital for Contagious Diseases during the summer of 1920, S. C. Smith[1] found that in 72 per cent. there were no cardiac complications, though the majority had tachycardia on admission, but in 28 per cent. vagaries of the pulse developed after several days, and in a few of these patients grave heart trouble succeeded. The initial tachycardia might last 36–48 hours only, but tended to persist for several days if myocarditis were present, and might end in heart block, which occurred suddenly on the seventh day. In 75 per cent. cases death took place in 36–48 hours. The block was usually complete, and its occurrence depended on the constitution of the patient, the length of time that had elapsed before antitoxin was given, the degree of toxicity of the disease, and the persistence of the tachycardia indicating the presence of myocarditis. Sinus arrhythmia was frequently found, and was considered by Smith to be physiological.

Premature beats occur in about 20 per cent. of the cardiac cases, more commonly arising in the auricles, and are of serious import if appearing in the first three weeks.[2] Auricular fibrillation is rare, though cases have been recorded by Parkinson[3] and Price[4] occurring in conjunction with heart block. Death may occur early, about the tenth day, from acute myocarditis, or later, about the third week, from fatty degeneration of the heart muscle.[5]

In a paper by F. W. White[6] based on 78 cases of diphtheria with heart complications, studied after discharge from hospital, he stated that most of the cases had murmurs with more or less cardiac enlargement. Sixty-five cases recovered completely during observation, of whom the majority cleared up in 2–4 months; 20 still showed signs after four months, and of these six cleared up in the following three months. In 13 cases the signs were persistent. In most cases there were no symptoms of heart trouble, but some were short of breath on exertion. He found, however, that the heart was often affected in the absence of symptoms as shown by enlargement, accompanied in 31 patients by a systolic murmur at the mitral area and by an accentuation of the second sound at the pulmonary area. This was due in most cases to dilatation and relative mitral incompetence. The murmurs were mainly over the mitral area, and were frequently transmitted into the axilla, increased by exercise, and accompanied by an accentuated pulmonary second sound. In a few cases these signs persisted, indicating pathological changes in the mitral valve.

In some of the older children systolic murmurs were heard over the base, altering with respiration and change of position; these tended to disappear as the patient improved, and were regarded as hæmic. Pulse irregularity was frequently seen, and also tachycardia. In the severer cases who had been kept in hospital 2–3 months, White found heart symptoms common, especially palpitation, weakness, pallor, and faintness after exertion, and occasionally cardiac distress in older children. The heart was dilated, mitral incompetence was present, the first sound at the apex was weak and sometimes reduplicated, the pulse was rapid and often irregular, and there was diminution of the cardiac reserve. The mild cases cleared up completely in the course of a few weeks, but the more severe took 5–6 months or more.

Other observers in the main agree with him, though Veronese[7] has found moderate hypertrophy only, and Baginsky[8] considers that chronic myocarditis or mitral regurgitation often persists for years without symptoms.

### *Clinical and Electrocardiographic Findings in 16 Cases*

My paper is based on 16 cases of diphtheria, which were sent to me for clinical and electrocardiographic examination on their discharge from the North-Eastern and North Western Fever Hospitals. All these cases had definite signs of heart involvement during their stay in hospital. Their ages varied from 3 to 19, the average age being just under 10 years. The length of stay in hospital averaged 80 days, the longest time being 140 days and the shortest 56. In none of the cases were cardiac abnormalities noticed during the first week of the disease, the earliest recorded being on the eighth day and the latest on the thirtieth. The mean time when the first signs were apparent was the eighteenth day.

The following were the principal abnormalities found whilst still in hospital:—

Tachycardia was present in all but one case.
Cardiac enlargement was found in three cases.
Alteration of the first sound at the apex was noted in seven cases, reduplication being present in four of them.
Reduplication of the second sound at the apex was found in two cases.
Premature beats were noted in two cases, and both occurred in the fourth week.

These cases were discharged from hospital under the normal procedure as convalescent. I found, however, that in none of them was the heart condition normal. The tachycardia had tended to persist and in nine out of the 16 cases the rate was over 100, the highest being 148 and the lowest 80. The mean rate was 107. Sinus arrhythmia was present in five cases, and premature beats arising in the auricles in one case. In three there was definite enlargement, but in one of these in which a mitral regurgitant murmur was present there was a suspicious history of past rheumatic trouble.

The heart sounds were altered in certain of the cases. In five cases the first apical sound was short, and in three reduplicated. In five the second pulmonary sound was accentuated and a gallop rhythm was found in two. A systolic murmur was present in 11 cases, mostly over the mitral area, usually faint, but tending to be increased by exertion. One case had developed paralysis of the right leg in the third week of the illness, and was still rather weak on that limb. Pallor was noted in two cases. In half the cases heart symptoms were complained of or found at the examination. These were mainly shortness of breath on slight exertion, undue fatigue, and faint feelings on moving about quickly. In all

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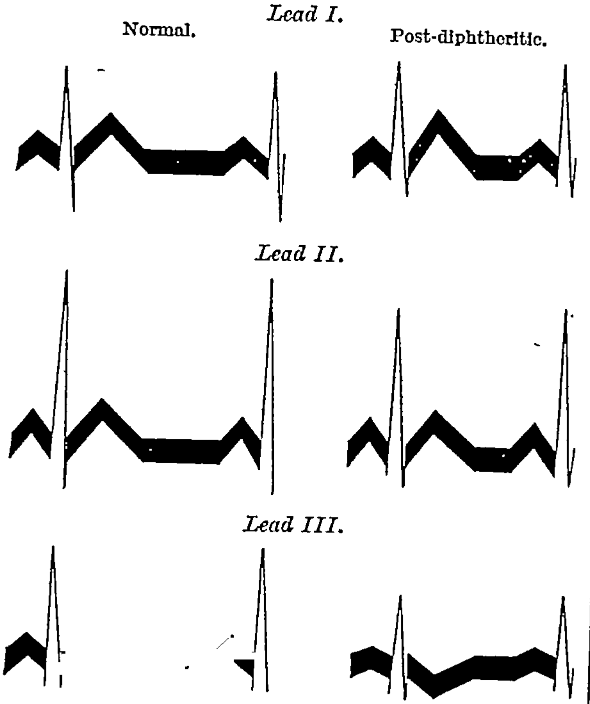
(*Continued from previous page.*)

Parsons, J. H.: Jour. Amer. Med. Assoc., lv., 2027, 1910. Seventeenth Internat. Congress Med., London, Sect. ix. pt. 1, 193, 1913.
Reich: Klin. Monat. f. Augen., xvi., 361, 1878.
Rivers: Arch. of Ophthalm., xxiii., 34, 1894.
Rosse, I. C.: The Cruise of the Revenue Steamer *Corwin* in Alaska and the North West Arctic Ocean in 1881: Medical and Anthropological Notes.
Le Roux et Renaud: Arch. d'Ophtalm., p. 377, 1908.
Roy Dunbar: Amer. Jour. of Ophthalm., p. 353, 1897.
Schiele: Arch. f. Augen., xix., 281, 1888.
Shorney, H. F.: Australian Med. Gazette, p. 651, 1912.
Silex, P.: Arch. f. Augen., xviii., 65, 1886.
Strader: Ophthalm. Record, xv., 540, 1906.
Syme, G. W.: Ophthalm. Rev., xxxv., 129, 1916.
Terrien: Arch. d'Ophtalm., xxii., 1902; xxviii., 679, 1908.
Terrier: Arch. d'Ophtalm., viii., 1, 1888.
Verhoeff and Bell: Proc. Amer. Acad. of Arts and Sciences, li., No. 13, 630, 1916.
Vogt, A.: Arch. f. Ophthalm., lxxxiii., 1912.
Vossius: Berlin klin. Woch., No. 19, 304, 1886; Beitr. z. Augen., p. 42, 1892.
Widmark: Skand. Arch., i., 264, 1889; v., 281, 1893. Nord. med. Arkiv, xxi., 1889. Skand. Arch. f. Physiol., iii., 1892.

cases except one there was diminished cardiac reserve. This was more marked in those with tachycardia. I electrocardiographed every case, and also six children with normal hearts and of approximately the same ages in order to contrast the differences between the two series. The electrocardiographic differences between the post-diphtheritic cases and the "normals" are not of marked degree, the principal points of difference between them being the heart rate, 107 as against 84, and the increased negativity of the T wave in lead III. in the former. Other differences occurring in lead III. are the diminished amplitude of the R wave, 5·1 mm. as against 9·2, and the P wave 0·78 mm. as against 1·5. There was also slurring of the Q.R.S. complex present in all leads in five of the post-diphtheritic cases, slurring of the R wave in lead I. in one case, and of the R wave in lead II. in another. I found, however, no damage to the conductive system beyond the slurring already referred to, which is probably due to involvement of the terminal arborisations of the bundle of His in the muscle-fibres themselves.



The following are the mean electrocardiographic measurements between the "normals" and post-diphtheritic cases.

*Normals.*

| Lead. | P. | P.R. | R. | S. | Q. | Q.S. | T. | S.T. | Cycle. |
|---|---|---|---|---|---|---|---|---|---|
| I. | 1·5 | 0·14 | 7·3 | 3·6 | 0 | 0·05 | 3·3 | 0·27 | 0·71 |
| II. | 2·2 | 0·14 | 13·5 | 2·6 | 0 | 0·05 | 3·4 | 0·27 | |
| III. | 1·5 | 0·14 | 9·2 | 1·1 | 1·1 | 0·05 | 0·13 inv. | 0·27 | |

*Post-diphtheritic Cases.*

| Lead. | P. | P.R. | R. | S. | Q. | Q.S. | T. | S.T. | Cycle. |
|---|---|---|---|---|---|---|---|---|---|
| I. | 1·5 | 0·14 | 8·2 | 1·2 | 0·6 | 0·048 | 3·9 | 0·25 | 0·56 |
| II. | 2·14 | 0·14 | 12·2 | 1·2 | 0·4 | 0·048 | 3·0 | 0·25 | |
| III. | 0·78 | 0·14 | 5·1 | 1·5 | 1·1 | 0·048 | 1·8 inv. | 0·25 | |

The vertical measurements are in millimetres, and the horizontal in seconds. The tension of the fibre of the electrocardiograph is standardised so that a current of 3 millivolts will cause a deflection of 30 millimetres on the scale.

### *Summary.*

The 16 cases of my paper differ from normal children of the same age in the following respects: 1. The higher rate of the heart-beat. 2. The presence of cardiac symptoms in half the cases. 3. The diminished cardiac reserve. 4. The presence of heart abnormalities in almost all the cases. 5. The changes in the electrocardiogram, notably the presence of "slurring" of the Q.R.S. complex in five of the cases, and the alteration in the character of the third lead.

### *Conclusions.*

From my investigation of these cases, though I am afraid the numbers are very few, I think it is a fair assumption to make that the effect of the diphtheritic toxin on the heart, in those cases where it has become involved during the course of the disease, is a more lasting one than is generally recognised. It is therefore, in my opinion, of the utmost importance that patients, in whom cardiac symptoms and abnormalities have been discovered during their stay in hospital, shall be thoroughly examined, both clinically and electrocardiographically, on their discharge before being allowed to return to their ordinary avocations, and that if the heart is found to be still affected they should be kept under observation until it has either regained the normal or has reached a stationary condition of recovery.

I should like to express my gratitude to Dr. F. H. Thomson, superintendent of the North-Eastern Fever Hospital, Tottenham, to Dr. E. W. Goodall, superintendent of the North-Western Fever Hospital, Hampstead, for their kindness in sending these cases to me, and to Dr. Ursula Blackwell, medical officer at the North-Eastern Fever Hospital, to whom I am indebted for the selection and hospital records of most of the cases.

### *References.*

1. Smith, S. C.: Jour. Amer. Med. Assoc., 1921, lxxvii., 765.
2. Coghlan, E. F.: Brit. Med. Jour., 1912, i., 534.
3. Parkinson, J.: Heart, Lond., 1914-15, vi., 13.
4. Price, F. W., and Mackenzie, Ivy: Ibid., 1911–12, iii., 233.
5. Bolton, C.: Trop. Med. Soc. Lond., 1905, xxviii., 62.
6. White, F. W.: Jour. Amer. Med. Assoc., 1905, xlv., 1243.
7. Veronese: Wiener Klin. Woch., 1893, vi., 305.
8. Baginsky: Nothnagel's Specielle Pathologie und Therapie, 1899, ii.

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# THE NATURE OF THE DEPRESSOR SUBSTANCE OR SUBSTANCES IN TISSUE EXTRACTS.*

BY SWALE VINCENT, D.Sc., M.D. LOND., F.R.S. EDIN. AND CANADA;

AND

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THE history of the subject may be told very briefly. In 1900 Osborne and Vincent[1] showed that extracts of nervous tissues cause a fall in blood pressure which is obtained after section of both vagi and after full doses of atropine. On the same date there appeared a communication by Halliburton[2] in which similar results were announced, with the important difference that neither nervous tissue extracts nor choline gave a fall after atropine. According to Osborne and Vincent, then, choline could not be entirely responsible for the depressor effect.†

In 1903 it was shown by Vincent and Sheen[3] that the depressor effect is not peculiar to extracts of nervous tissues, but is common to all the tissues of the body with the exception of the adrenal and the infundibular part of the pituitary. They found that, just as in the case of nervous tissues, extracts of other organs must contain some active principle which is not choline. The general statement that all animal tissues impart to watery or saline extracts a substance or substances which, when injected into the circulation of a living animal, lower the arterial blood pressure was made in the first edition of "Internal Secretion and the Ductless Glands" published in 1912. About this time, too, the suggestion arose that the active substance might be histamine.

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* The expenses involved in this research have been defrayed by a grant to one of us (S. V.) from the Government Grant Committee of the Royal Society.

† Schäfer and Moore[4] had incidentally noted a fall of blood pressure as the result of injection of brain extracts, and Mott and Halliburton[5] had suggested that the active substance was choline.

That these facts were well known has not hindered numerous sporadic communications to the effect that some tissue or other contains an active principle which lowers the blood pressure. It is necessary only to mention a few examples. In 1918 Marfori found that lymphatic glands contain a depressor principle, and quite recently McDonald,[4] and James, Laughton, and Macallum[5] have reported that there is a depressor substance in extracts of liver.

Attempts to isolate the active principle have not been very numerous. Vincent and Cramer[6] found that there are two groups of substances in watery extracts of nervous tissues, both of which, when injected into the veins of an animal, lower the blood pressure. Both are soluble in water and in saline, while one group only is soluble in alcohol. The alcoholic solution contains two depressor substances, one of them has its effect abolished by atropine, the other has not. Evidence was found of the presence of choline in the form of a di choline anhydride, but it was abundantly clear that the depressor effect of nervous tissue extracts is not due entirely, nor even largely, to the presence of this choline derivative.

Owing to the appearance of numerous pharmacological papers on the action of histamine, the claim of this substance to be considered as responsible for the depressor effect has been more or less revived, but its position has always been weak, because it is insoluble in ether, while the depressor substance (or substances) is soluble in this medium.

A not unnatural suggestion—namely, that the lowering of blood pressure is due to a mixture of choline and histamine in the extracts—has quite recently been made by Best, Dale, Dudley and Thorpe.[7] On referring to the papers of Osborne and Vincent and Vincent and Sheen, it will be seen that tracings are shown in which the depressor effect of tissue extracts is clearly indicated before and after atropine in all three laboratory animals—dogs, cats, and rabbits. These, as recently pointed out to us by Prof. R. J. S. McDowall, show clearly that histamine cannot be concerned in the effect, as this substance does not produce a depressor effect in rabbits, except under special conditions which need not be referred to here.

We have repeated and extended the experiments upon rabbits and find that before the administration of atropine, choline produces a fall; histamine either no effect or a rise, a mixture of choline and histamine, a very slight fall usually combined with a slight rise, tissue extracts a pronounced fall. After atropine choline produces a marked rise; histamine either no effect or a rise, a mixture of choline and histamine a slight but pure rise; tissue extracts a pronounced fall. Thus we have abundant evidence that, although choline and histamine may be present in tissue extracts, and may be partly responsible for their physiological activity, there must also be present some other substance which differs fundamentally in its pharmaco-dynamical action and presumably, therefore, in its chemical nature, from either of these substances.

There is some evidence that choline plays a larger part in the actions of nervous tissue extracts than in those of extracts of other organs and tissues, though even in the former it is clear that a large part of the effect is due to some substance which is neither histamine nor choline.

*References.*

1. Osborne and Vincent. Proc. Physiol. Soc., February, 1900.
2. Halliburton. Ibid.
3. Vincent and Sheen: Jour. Physiol. 1903, xxix., 242.
4. McDonald, W. J. Proc. Soc. Exp. Biol. Med. 1925, xxii. 483.
5. James, Laughton, and Macallum, A. B. Science, lxii., 151.
6. Vincent and Cramer. Proc. Physiol. Soc., July 1903. Jour. Physiol., xxx., 143.
7. Best, Dale, Dudley and Thorpe: Commun. to the Physiol. Soc. March, 1926.
8. Schäfer and Moore. Jour. Physiol., 1896, xx., 1.
9. Mott and Halliburton. Proc. Physiol. Soc., February 1899.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE

### SECTION OF LARYNGOLOGY

THE summer meeting of this Section took place on June 3rd and 4th, under the Presidency of Dr. W. H. KELSON, the first session being devoted to the reading and discussion of papers.

Sir WILLIAM WILLCOX read a paper on

*Nasal Sinusitis as a Cause of Toxaemia.*

His object was to show how frequent was the rôle played by nasal sinus disease in conditions of illness, the causation of which was obscure, looking at the subject from the standpoint of the general physician. He maintained that in most cases, if one was alive to the possibility, some focus of infection could be found. Sometimes X rays showed a shadow when transillumination did not reveal any striking differences, and in this connexion he said he thought the radiologist should restrict himself to stating what he found, leaving the interpretation to others. For instance, to report that there were certain abnormal dark areas was within the radiologist's province, but the declaration that pus was present might launch the physician into a sea of uncertainty. Sir William Willcox emphasised the importance of sinus examination in all cases of chronic ill health. Each patient presented a problem in immunity, and the management of every case should be based on that view, and operative measures should be restricted as much as was consistent with the best interests of the patient, who should be given every chance to recover from the auto-intoxication. He showed several patients and recounted their histories, which definitely supported his contentions.

Sir STCLAIR THOMSON said transillumination was of value only in comparing one side with the other. The only certainty in the matter of diagnosis was afforded by exploration, and he was glad Sir William Willcox had put forward the plea that the radiologist should cease from diagnosing sinus trouble, not only because he had not the evidence to enable him to do so, but his declaration sometimes placed the physician in an awkward position with his patient, who knew the opinion which had been given. Sir StClair Thomson showed charts of cases in support of Sir William Willcox's paper.

Mr. HERBERT TILLEY agreed that if an antrum was dark on transillumination it did not necessarily mean it was the seat of active disease.

Dr. P. WATSON WILLIAMS agreed with the advice to seek for a focus of infection in cases of obscure illness, and not to wait until there was clear evidence of infection. Pancreatic disease was sometimes due to a chronic infective condition, often associated with chronic cholecystitis.

Dr. W. SYME said there had long been a tendency to deal too leniently with suppuration in the accessory sinuses, both in regard to diagnosis and treatment. Transillumination might lead to error in many cases of antral disease; the only method was to examine the contents of the antral cavity derived by puncturing it.

Sir JAMES DUNDAS-GRANT spoke of osteo arthritis which probably originated in sinus disease, and said he had seen nervous and despondent people restored to health and cheerfulness after the ethmoid cells had been cleaned out. He advocated a greater use of transillumination by the general practitioner.

Dr. A. LOGAN TURNER read a joint paper, by himself and Dr. F. E. REYNOLDS, on

*A Fatal Case of Leptomeningitis.*

This was a case in which the death of the patient followed an operation on the ethmoidal air cells, and Dr. Turner showed, by means of an admirable series of slides from the case, the path which the infection took. He submitted the contribution because the case clearly showed that one possible path of infection between the nose and the intracranial structures was via the lymphatic channel. The patient, a man aged 33, had suffered from nasal obstruction due to polypi on both sides. These were removed and the ethmoidal cells exenterated. Following this, a temperature of 103·8° F. quickly developed and pneumococcus was grown from the turbid cerebro-spinal fluid. Death took place five days after the operation.

Dr. W. JOBSON HORNE gave a short contribution, supported by an epidiascopic demonstration, on the

### *Rôle of the Lymphatics in Laryngeal Disease.*

Twenty-five years ago, he said, it occurred to him that the lymphatic supply of the larynx was an open field for research, and since then, as the material arrived, he had been following the subject up. First he dealt with cases in which there was established disease in the larynx, and the lymphatics became involved subsequently. It was strange that there were very few diseases of the larynx in which the adjacent and corresponding cervical glands became implicated. One notable exception to this was malignant disease of the larynx. In this, sooner or later, the glands became involved, and the period at which that occurred depended largely on whether the cancer was extrinsic or intrinsic. In the case of the latter, the date of gland involvement depended on whether the part of the larynx attacked was covered by squamous epithelium or by columnar epithelium, it being earlier in the latter than in the former, and the results of interference in these cases was less satisfactory. As to the rôle of the larynx in lymphatic disease, he showed sections from cases of Hodgkin's disease and of mediastinal sarcoma in which the larynx became involved. He said that some sarcomata seemed to be remarkably benign, and some authorities considered that they should be classified with the granulomata. He did not claim that the condition of the larynx was responsible for Hodgkin's disease, but it was one site of infection, and the particular vulnerable site was between the cartilages of Santorini and Wrisberg.

The second session was devoted to clinical cases. In the evening the Section entertained Sir StClair Thomson, the President of the Society and a prominent member of the Section, to dinner.

## EDINBURGH OBSTETRICAL SOCIETY.

AT a meeting of this Society held on May 12th Dr. R. W. JOHNSTONE, the President, being in the chair, Dr. F. J. BROWNE described a case of

### *Concealed Hæmorrhage with Placenta Prævia.*

The patient, he said, was a primigravida who had completed eight months of her pregnancy and was admitted to hospital on account of vaginal bleeding. Placenta prævia was diagnosed and the vagina was packed. Twelve hours later the pack was removed and external version attempted, but was not persevered with on account of the large amount of old blood-clot that was passed. The membranes were therefore ruptured and spontaneous delivery took place three hours later. The placenta was normal in appearance and size, but overlying it was a quantity of fairly old blood-clot, which covered practically the entire portion which had been prævia and extended into the upper portion as well. The clot weighed over 12 oz. A catheter specimen of urine contained a moderate quantity of albumin. Three other cases described by Holland, Williamson, and Swayne were discussed, after which Dr. Browne stated that none were cases of purely unavoidable hæmorrhage, and his own case showed that in some cases of placenta prævia the hæmorrhage might be concealed; the concealed hæmorrhage, however, might be due to mechanical separation of the portion of the placenta situated in the lower uterine segment and in this event would be unavoidable. Placenta prævia could not be excluded in a case of concealed hæmorrhage, and some cases of concealed hæmorrhage without albuminuria might be accounted for in that way. In all cases described, however, albuminuria was present and, therefore, it was justifiable to presume the bleeding to be of toxæmic origin; thus bleeding in placenta prævia might sometimes be accidental.

Dr. W. F. THEODORE HAULTAIN spoke on

### *Some Practical Aspects of Antenatal Care,*

the great importance of such care to mother, child, doctor, and the State being pointed out. Dr. Haultain disagreed with the relative frequency of the vertex positions as stated in the leading text-books on the subject. From statistics of 1000 cases seen within 14 days of labour at the antenatal clinic of the Simpson Memorial and Royal Maternity Hospital, Edinburgh, and another 1000 uncomplicated full-term cases delivered in the labour ward of the same hospital, the relative frequency in round figures was found to be L.O.A. 60 per cent., R.O.A. 30 per cent., R.O.P. 8 per cent., L.O.P. 2 per cent. The figures for primiparæ and multiparæ were taken separately in each case, but little variation was shown in these two main groups.

*Relative Frequency of Vertex Positions.*

| — | Primiparæ cases. | | Multiparæ cases. | | Total cases. | |
|---|---|---|---|---|---|---|
| | Ante-natal, 453. | At labour, 477. | Ante-natal, 548. | At labour, 523. | Ante-natal, 1000. | At labour, 1000. |
| | % | % | % | % | % | % |
| L.O.A. | 56·4 | 63·7 | 55·5 | 66·9 | 55·9 | 65·4 |
| R.O.A. | 32·3 | 27·0 | 34·5 | 25·3 | 33·4 | 26·1 |
| R.O.P. | 8·0 | 8·4 | 7·1 | 5·9 | 7·5 | 7·1 |
| L.O.P. | 3·3 | 0·9 | 3·1 | 1·9 | 3·2 | 1·4 |

The efficacy of pads as described by Buist in posterior cases was then discussed, and statistics were given of 70 consecutive occipito-posterior cases which had been treated at the antenatal clinic during the last two years; 38 of these were primigravidæ, and in these the pads proved successful in 33 by substituting an anterior position for the posterior; in multiparæ 25 were successful, thus in the whole 70 cases success was obtained in 82·8 per cent. In every case success or failure was judged by the position at labour as well as that found in the clinic after removal of the pads. To achieve success it was stated that (1) the treatment should not be done till the last month of pregnancy, (2) the head must be movable, and (3) castor oil should be taken at night when the pads were in position. No danger could be caused by the treatment to either mother or child, and the difficulty of the future labour could not be aggravated by the treatment, which was very simple and would in many cases avoid a tedious and often dangerous labour.

The statistics of a consecutive series of cases of external version in breech presentations was then given. In all 28 cases had been so treated in the last one and a half years, 12 in primiparæ and 16 in multiparæ. Among the primiparæ version was successful on nine occasions and among the multiparæ 14 successes were reported; thus 82 per cent. of the total number were successful. Anæsthesia was recommended to aid success in primigravidæ and the manipulation was not advised till the last month of pregnancy. Failure in the primigravidæ was attributed to the cases being of the "frank breech" variety, the failure in each case being noted at the time of manipulation, whereas in the multiparæ the two failures were caused by a return of the breech presentation after it had been turned. The technique for the measurement of the diagonal conjugate was described; this measurement should not be taken more than six weeks before full term, for by that time the perineum and soft parts were soft and the promontory of the sacrum could be reached in most cases with comparative ease, whereas earlier in pregnancy it was usually a very difficult procedure. By the estimation at this period there would be still plenty of time to decide on induction of premature labour if required, and if the pelvis was too small to warrant induction at that time then the case was one for Cæsarean section and not induction With regard to the position of the patient to allow this measurement to be taken with the greatest ease, Dr Haultain advised the exaggerated left lateral position, the woman flexing herself as much as possible. Extreme gentleness in making the estimation was necessary to obtain satisfactory results

In conclusion, Dr Haultain thought that antenatal care did not begin early enough, and suggested that patients should be seen after having missed one period; by that means a large number of abortions might be averted, especially those due to a retro displacement of the uterus, the bowels could be looked after, and all cases of slight sickness could be treated, thus might hyperemesis gravidarum be practically obliterated Rarer conditions such as tubal gestation could also be recognised before rupture occurred and the woman's life put in danger

## ROYAL ACADEMY OF MEDICINE IN IRELAND

### SECTION OF MEDICINE

A MEETING of this Section was held on May 14th, Dr F C. PURSER, the President, being in the chair

Dr R STUMPF read a paper on

*Rontgen Therapy in Connexion with Certain Blood Diseases*

Having reviewed the treatment of polycythæmia rubra vera, pernicious anæmia and lymphatic leukæmia, he considered the subject of myelogenous leukæmia in greater detail. In his opinion, the best treatment was by X rays combined with the administration of arsenic There was never complete cure, but cases were known in which improvement sustained over many years had resulted from X ray treatment of this condition Relapses occurred in weeks or months, each responding, but ever more slowly, to treatment. After each treatment there was a diminution in the size of the spleen, a drop in the leucocyte count, and an improvement in the patient's general condition The focus for radiation was the spleen The essential point to remember was that each case must be treated on its individual merits and no dogmatic scheme could be followed The aim was to improve the patient's general health rather than to attain a rapid diminution in the size of the spleen and an immediate drop in the number of leucocytes As regards technique, it was best to start with small doses and increase them very carefully Dr Stumpf gave an acount of a case of myelogenous leukæmia Mrs B, aged 28, showed for several months atypical symptoms and suddenly developed a severe pain in her abdomen about a year ago The spleen was found to be much enlarged and the leucocyte count was 250 000 per c.mm She had had three courses of X ray treatment, and during part of the time was getting injections of arsenic In the course of treatment the leucocytes gradually fell from 250 000 to 25,000 per c.mm This favourable figure had not been maintained, since it was not considered necessary to give sufficient exposures to the X rays to bring about this result, the patient's general health being excellent Frequent blood counts were being carried out and sufficient treatment was given to maintain the leucocytes somewhere between 60,000 and 90,000 per c.mm At the beginning of treatment the spleen reached to below the level of the umbilicus and extended across the middle line It was now three fingers breadth below the costal margin and was well to the left of the middle line The patient's weight had increased very considerably and her general condition was excellent

Dr A. R PARSONS said that his results had been much the same as Dr Stumpf's as regards early improvement and subsequent failure to repeat the first success. He asked whether deep X ray therapy had any advantage over ordinary X rays

Dr MAURICE HAYES said that with deep X rays the number of treatments were less, the intervals between treatments were longer, and the risk of damaging the skin less, also by deep X rays it was possible to get a more uniform radiation at the first dose

Dr J SPEARES wondered if X ray treatment did in reality prolong the life of these cases As to lymphatic leukæmia, it was his experience that the patient might live a very long time He was at present treating a patient who had had the disease for 21 years

Sir JOHN MOORE read a Historical Note on Alkaptonuria, recalling the first example of this abnormality described in Dublin, at a meeting over which the speaker presided 45 years ago

*Exhibition of Radiograms*

Dr J SPEARES and Dr G BEWLEY showed radiograms of three cases of diaphragmatic hernia One of Dr Speares's cases had marked gastric symptoms for relief of which operation was urged Dr Bewley's case was one of eventration

Dr C L McDONOGH showed radiograms of (*a*) rickets with multiple fractures, (*b*) sarcoma of the sternum. In the former case eight fractures of long bones were to be seen, the changes typical for rickets being marked in the long bones, ribs, and skull In the latter case the X ray appearance of the tumour, the failure to find any primary growth, and the negative W R. pointed to the very rare condition of primary osteo-sarcoma of the sternum.

Dr T GARRETT HARDMAN and Dr LEONARD ABRAHAMSON showed radiograms of a chest after injection of lipiodol, and gave an account of the technique employed

### SECTION OF ANATOMY AND PHYSIOLOGY

A MEETING of this Section was held on April 16th, Dr C M WEST, the President, being in the chair

Prof J M O CONNOR demonstrated Indian ink injections of the living kidney blood vessels, and read a paper on

*The Blood Flow through the Kidney and its Relation to the Theory of Urine Formation*

He said that by diverting the blood of the left kidney down the vena cava into a reservoir while the blood pressure is maintained by a reserve of blood in a compensation tube connected with the aorta, the blood flow through the kidney at constant arterial pressure could be examined On closing off the compensation tube the flow with falling pressure could be determined If the blood flow were graphed against the prevailing pressures there was, with falling pressures, a kink (or kinks) in the graph in the sense of increases or decreases in the blood flow These kinks occurred at various levels of blood pressure and of blood flow, and were relatively the same at all levels in any one animal. A similar kink could be produced by diminishing the pressure in the renal artery by a clamp on the abdominal aorta, while the pressure was maintained constant in the rest of the body by having a carotid artery connected with the compensation tube Similar alterations in flow either positive or negative resulted from the injection of diuretics These results were in keeping with the suggestion that the flow of blood through the kidney is regulated by a compression of the glomeruli by the secretion pressure of the urine Experiments in which the kidney vessels were injected with Indian ink showed agreement with the theory that the relative number of glomeruli uninjected or but partly injected corresponded with the kink on the graph of blood pressure and blood flow

The PRESIDENT said that until he had heard Prof O Connor's paper he had not been aware of any opening of the glomeruli and he did not see why even when destruction of the capsule occurred, it should block up the vessels of the glomeruli. Referring to the injection and non-injection of glomeruli, he asked if Prof. O'Connor allowed the injection to flow for any length of time first, and to go on flowing till the kidney got black; or if the injection just flowed through the kidney vein. He himself did not see why the blood should flow through every vessel of the kidney at the same time.

Dr. W. A. TAYLOR asked if Prof. O'Connor had ever tried experiments to determine the amount of blood flow through the kidney in a given time, and had tried to determine from this the relation between the time of the blood flow and the amount of the blood flow through the kidney. He believed the blood flow through the kidney was very great.

Dr. F. H. MOORE asked if Prof. O'Connor had found the urine altered in any way after he had carried out his experiments; if, for example, when the vessels were clamped and the blood flow altered, there was any albumin in the urine. He mentioned the work of Oscar Clotts, of Montreal, in relation to the altered circulation of the blood in a nephritic kidney to that in an ordinary kidney. Oscar Clotts said that in nephritis one was dealing with an organ altogether different from a healthy kidney. He himself believed that rabbits suffered from chronic interstitial nephritis in their old age, and he wondered if the study of these animals would throw any additional light on Prof. O'Connor's theory, especially in relation to nephritis.

Dr. L. G. GUNN asked if, when Prof. O'Connor was experimenting on one kidney, the second kidney was left alone. Sometimes the secretion of one kidney stopped altogether for a time, but then the other kidney acted very vigorously. After nephrectomy it was quite common for patients to get attacks of polyuria without any apparent reason.

Prof. O'CONNOR, in reply, said that the kidney was almost stony hard, and this hardness varied accordingly to the activity of the kidney. If the kidney was secreting well it was especially hard. When an injection was given it always came out through the renal vein. The blood flow through the kidney was enormous. The maximum flow in a rabbit's kidney was 6 c.cm. of blood per minute. Cutting the kidney nerves caused vaso-constriction which gradually passed off; but sometimes the constriction was so great that no urine flowed for a considerable time. The second kidney was practically always left alone. It was commonly thought that the more urine was passed the better the kidney was working, but from his experiments he did not think it was so. He believed that as often as not, when the flow was small, the kidney was doing just as much work as when the flow was big.

# GENERAL MEDICAL COUNCIL.

### TUESDAY, JUNE 1ST.

### PENAL CASES.

IN accordance with the usual custom the penal cases were heard in public, the Council deliberated on them in camera, and the results were then announced.

The Registrar read a report by the Dental Board of the United Kingdom on *the case of William Birkett*, registered on June 21st, 1922, as of 189, East India Dock-road, Poplar, London, E. 14, who had appeared before the Board in November last, charged with employing an agent to canvass for him; also for certifying to the Royal Liver Friendly Society the delivery of certain dentures and receiving fee for the same when, in fact, no dentures had been supplied to the patient. The Board found certain facts satisfactorily established and considered that Mr. Birkett's name ought to be erased from the Register. The Council directed that it be erased.

*The Case of John Edward Rees* (adjourned from May, 1925).—This practitioner, registered as of 10, Priory-street, Carmarthen, L.R.C.P. Edin., 1913, L.R.C.S. Edin., 1913, L.R.F.P.S. Glasg., 1913, had been convicted of drunkenness on five separate occasions, three times when in charge of a motor vehicle, and judgment had been postponed for one year. Mr. Rees appeared, accompanied by his counsel, Mr. Daniel Johns, instructed by Mr. J. C. Williams, solicitor, of Carmarthen. Counsel read several letters in regard to Mr. Rees's good character since the previous hearing. The Council decided not to erase his name from the Register.

*The Case of Henry James Burke, M.C.*, registered as of Ivy House, Hadfield, Derbyshire, L., L.M., 1913, R.C.P. Irel., L., L.M., 1913, R.C.S. Irel. This practitioner had appeared before the Council in May, 1925, having been convicted at the Glossop police-court and Mottram Petty Sessions on three occasions of being drunk in charge of a motor-car. Judgment had been postponed for 12 months. Mr. Burke appeared in answer to his notice and gave an assurance that he would abstain from alcohol. Having considered evidence with regard to his conduct during the last 12 months the Council decided not to erase his name from the Register.

*The Case of Austin Heron*, registered as of West African Medical Service, L., L.M., 1924, R.C.P. Irel., L., L.M., 1924, R.C.S. Irel., had also been adjourned from the session of May, 1925. He was then charged with having been convicted, under the name of William Gallagher, at the Sutton Petty Sessions of insulting behaviour to certain females. Mr. Heron wrote from West Africa asking for the postponement of the Council's decision for another year, when he would be able to attend in person. The Council agreed to the further postponement.

### WEDNESDAY, JUNE 2ND.

*The Case of Andrew George Tottenham Hanks*, registered as of 10, Edith-grove, Chelsea, London, S.W. 10, L., L.M., 1888, R.C.P. Irel., L., L.M., 1888, R.C.S. Irel., who appeared before the Council in November last, having been convicted in London police-courts on four occasions of being drunk and incapable. Mr. Hanks was accompanied by his solicitor, Mr. Oswald Hempson, who handed in letters in regard to his good conduct in the interval. The Council decided not to erase his name from the Register.

*The Case of Abdallah Jacob Dowek*, registered as of 265, High-street, Pendleton, Salford, Lancs, L.M.S.S.A. Lond., 1925, who had been summoned to appear before the Council on the charge of seeking to promote his own professional advantage by inviting patients of Dr. Arthur Clouston Russell, whose assistant he had previously been, to become patients of his. The complainants were the London and Counties Medical Protection Society. Dr. Dowek attended, accompanied by Mr. Jackson, K.C., instructed by Messrs. Barrow-Sicree, solicitors. The complainants were represented by Mr. Dickens, K.C., instructed by Messrs. Le Brasseur and Oakley, solicitors. Dr. H. B. Brackenbury, a member of the London and Counties Medical Protection Society, took no part in the proceedings. Mr. Dickens examined Dr. Russell, who testified that while he was in hospital during the summer and autumn of 1925 his wife had engaged Dr. Dowek as his assistant. Dr. Dowek, when Dr. Russell came out of hospital and requested him to sign the usual bond, had refused to do so unless it contained conditions of his own providing for increased pay and his engagement as permanent assistant with a view to partnership. Dr. Russell, after giving Dr. Dowek two days to reconsider his refusal, had dismissed him with no further notice. Dr. Russell had then heard rumours that Dr. Dowek had set up in practice near by and had been trying to attract certain of Dr. Russell's patients to himself; he had therefore instructed one Chapman, whom he employed as his collector, to find out further details. As a result of the information Chapman gave him he had complained to his defence society. A statutory declaration by Chapman was before the court, in which statement he admitted having misled Dr Russell Mr Dickens called various patients of Dr Russell s in evidence, some of whom testified that Dr Dowek had called on them, inquired how they were and had told them that he was now in practice on his own At the conclusion of the case for the complainants Mr Jackson submitted that on the evidence before the Council there was no case for the accused practitioner to answer The Council, after deliberation, dismissed the case

*The Case of William Joseph Ryan*—This practitioner's name was erased on charges of drunkenness, but leave was given to apply after an interval for restitution.

WEDNESDAY, THURSDAY, AND FRIDAY, JUNE 2ND, 3RD, AND 4TH

*The Case of Samuel Grahame Connor*, registered as of 119, Oxford-street, London, W 1, M B , C M , 1899 U Edin *Dr Connor appeared before the* Council on the following three counts (1) of affording to certain drug addicts facilities for obtaining dangerous drugs in the form of prescriptions, by which they were enabled to obtain from chemists morphine and heroin, such prescriptions not having been given in the ordinary course of bona fide medical practice and treatment , (2) of supplying morphine, which he had obtained for his own surgery use, to certain addicts otherwise than in the course of bona fide medical practice and treatment , and (3) of having been convicted at Marlborough-street police-court on March 29th, 1926 on each of three summonses for an offence against No 9 of the Regulations made under the Dangerous Drugs Act, 1920—viz., of failing to enter in a register, kept for the sole purpose, 50 gr of morphine purchased and obtained by him—and having been sentenced to two months' imprisonment in the second division for each of the three offences, and also fined £50 for each Also of having been convicted at the same time of an offence against No 5 of the said Regulations—viz., of giving a prescription for the supply of morphine and failing in that prescription to specify the address of the person for whom it was given—and having been fined £50 On appeal to the County of London Sessions the sentences *of imprisonment* were remitted and the fines ordered to stand.

The complainants were the Home Office, who were represented by Sir Travers Humphreys , counsel instructed by the Director of Public Prosecutions Dr Connor was accompanied by Mr J A Hawke K C , M.P , and Mr H D Roome, instructed by Messrs Engall and Crane, solicitors

Sir Travers Humphreys in opening the case for the prosecution, submitted a principle governing the correct use of dangerous drugs He suggested that their use was only admissible in certain circumstances. One was in attempting to cure an illness another was in attempting to cure an addiction by administering diminishing doses and the third was their use in minimum quantities to enable incurable addicts to live useful lives If a medical man became a mere purveyor of drugs to anyone who asked for them he was abusing the great trust reposed in him by the State In any case the essence of the proper use of dangerous drugs was strict personal supervision The case against Dr Connor, he said, was as follows: On May 28th 1923 Dr Crosse, a Divisional Medical Officer of the Ministry of Health, was sent to interview Dr Connor about certain drug addicts. Dr Connor had then told him that to give the drugs they required was the only way to get rid of some addicts who made a great deal of trouble Dr Crosse disagreed, and pointed out the necessity for refraining from giving dangerous drugs except to persons who could be strictly supervised Dr Connor agreed and thanked Dr Crosse confirming his agreement with these views almost immediately in a letter Counsel now read a list of prescriptions given by Dr Connor to a Mrs. V D down to the time of the interview with Dr Crosse, in which he prescribed about 40 gr at a time The day after this visit Dr Connor prescribed 10 gr , and thereafter progressively reduced the doses until March, 1924, when they again began to increase By September, when she ceased to be a patient, she was getting 40 gr a month Miss P , another patient, had landed, said counsel, at Oban on June 17th, evidently ill, and had sent Dr Connor a telegram containing the words " Please send, very important." The Home Office had sent Dr Crosse to Dr Connor with a copy of this telegram, which had been intercepted, and Dr Connor gave him some *particulars of the patient's history* She was then said to have been Dr Connor's patient for about four years, and he told Dr Crosse that she had been in a nursing home for phthisis and had first been given heroin by another doctor The prescriptions registered by the chemist showed that this lady had received several amounts of four or five grains, sometimes on two consecutive days , he had continued to treat her after this and had prescribed steadily increasing amounts of heroin. Following an interview by an inspector of police in December, Dr Connor had reduced these amounts, and in February Miss P answered an advertisement of a lady doctor, Dr Vivian, inviting resident cases. She was anxious to be cured if possible Dr Vivian had reduced her doses from a grain and a quarter a day to a tenth of a grain, and would say that she could have cured the patient if she had stayed long enough However after about five weeks a friend took her away Dr Vivian had found that Miss P s condition did not justify her receiving heroin

Miss B , another addict, had been receiving very small doses of morphine and atropine from her regular medical attendant and had been introduced to Dr Connor for the sole purpose of obtaining morphine Whereas she had been getting only 92 gr a year, Dr Connor had given her 14½ gr *on the first day and in* ten months had supplied her with 700 gr On March 29th 1926 two local practitioners, Dr Dillon Kelly and Dr Moon, had been called in to Miss B for severe asthma and had decided that she was assuming the symptoms in order to get morphine Dr Moon had put her in Lambeth Hospital, where Dr A. L. Baly had attended her Dr Baly had seen no reason to give her morphine and with the exception *of a quarter of a grain on the night of her admission*, had given her no more up to the present. It was for omitting the address on one of Miss B s prescriptions that Dr Connor had been fined.

Colonel S. G, had crashed during the war and injured his spine Dr Connor had been supplying him with enormous amounts of morphine , 100, and once 200 gr at a time, either by prescription or in bottle Finding it difficult to get morphine in Paris, where he lived, he paid periodical visits to Dr Connor to obtain his supplies.

Miss Y , over whom the magistrate had sentenced Dr Connor to imprisonment, was an old and quite incurable morphine addict She had lived for years in Glasgow On May 24th, 1924 a police officer visited Dr Connor and told him that Miss Y had been convicted of forging prescriptions to get morphine and was being attended by a doctor in Glasgow, who was prescribing this drug In 1925 Dr Connor had been writing orders to a chemist for quantities of morphine for surgery use, 50 gr at a time, and posting the bottles off himself to Miss Y , the result being that in no chemist's register was there any indication that she was getting any morphine at all In December 1925, Dr Connor told Inspector Burnby that Miss Y had been to see him about six times that year and that he had sent other prescriptions to her in Glasgow From the list of prescriptions it appeared that she had only come four times and that Dr Connor had been supplying her by other means. She had had 850 gr in 1925 When the officer asked for Dr Connor s accounts and methods of requesting payment, Dr Connor replied that he never rendered accounts and that his patients paid exactly what they chose. He said that on Dec. 11th the lady had sent him a money order for £8 for eight visits at about a guinea a time

Of Dr. Connor's three convictions one was for failing to register quantities and names of recipients, and 850 gr. of morphine were unaccounted for. In his cross-examination at the quarter sessions Dr. Connor had said that he got the chemist to send to Miss Y. the morphine which he had ordered for surgery use in order to save her chemist's fees. Counsel submitted that this was no explanation. Further, Dr. Connor had admitted both that he knew that Miss Y. was being attended by a doctor in Glasgow and that she had been convicted for forging prescriptions.

Counsel then called Dr. R. E. Crosse, Divisional Police Surgeon, and examined him as a witness. Dr. Crosse said that he had called on Dr. Connor on May 28th, 1923, with a list of names of persons alleged to be addicts. Dr. Connor had said that, as he did not dispense, he did not keep a register. He admitted prescribing morphine and heroin as snuff to avert serious consequences and to prevent patients becoming troublesome. He had agreed that there was little possibility of success unless strict supervision were maintained, and undertook to decline to prescribe for patients whom he could not supervise. He had written a letter confirming this. On August 6th, 1925, he had gone to see Dr. Connor about a telegram from Miss P. which the Home Office had intercepted. Dr. Connor had told him that Miss P. had been his patient for about four years and had been taking heroin to relieve a cough; she had been in a nursing home and had been cured of the heroin habit. Dr. Connor had not given him the name of the home nor that of the medical attendant. Miss P. had then, according to Dr. Connor, gone on a voyage to South Africa and had there succumbed again to the habit; he was now supplying the drug solely by reason of her addiction, and did not hope to cure her. In addition to other amounts he had prescribed 5 gr. on June 16th and 4 gr. on June 17th, also he had prescribed 4 gr. on July 4th and another 4 gr. on the 5th. Dr. Connor said that she had had 12 gr. on June 6th as she was starting for the Hebrides; he could not explain how he had come to prescribe on the two consecutive days, June 16th and 17th. He could not remember having received a telegram nor having despatched a prescription in response.

Mr. Hawke cross-examined.

Counsel then called Dr. M. C. Vivian, who said that Miss P. had come to her as a resident patient, in answer to a standing advertisement, on March 31st of this year, to be cured of the heroin habit, and had stayed till May 6th. Witness had reduced her in five weeks from 1½ gr. a day to 1/10 gr. She had tried other drugs as substitutes without success. Another fortnight, she thought, would have produced a total cure. Nothing in Miss P.'s physical condition, except her addiction, had justified her receiving heroin. During the time Miss P. was with her she had written to Dr. Connor asking him not to send her any prescriptions or drugs; she had received no reply. Cross-examined, the witness said that Miss P. had left while she was out and had given no notice. In answer to a question from the President, witness said she had written to Dr. Connor because Miss P. had told her that he had been prescribing and she was afraid that the patient would continue to receive prescriptions.

Counsel then called Dr. A. L. Baly, assistant superintendent of Lambeth Hospital, who said that Miss B. had been admitted on March 31st of this year. He had not seen her until the morning after she arrived. She had been in a very agitated state and had told him that she was suffering from asthma that could only be relieved by morphine. She had had a quarter of a grain on admission. Although she had been admitted on the representation of the relieving officer under the Lunacy Act, she was not certifiably insane. She was still in the hospital and had had no more morphine, as he had not considered it necessary. Her health had considerably improved. Cross-examined, he admitted that it was a remarkable thing that depriving her of morphine had been so successful. Replying to a question from the President, he said that she was showing signs of bronchitis. He had known that she had been taking morphine and had seen a copy of a prescription for two-thirds of a grain twice daily. He had given her a dose of sterile water, which had had the required effect; he had often known this happen.

Counsel then called Detective-Inspector W. Burnby, who said that he had interviewed Dr. Connor on several occasions. He deposed that he had taken with him several originals and copies of prescriptions, including those made out for Miss Y., all of which, with one exception, were ordered for surgery use. Miss Y. had been convicted on August 24th, 1922, for forging a prescription for morphine; she had been released to a home and admonished by the sheriff. He had told Dr. Connor that she was being treated by another doctor in Glasgow. The doctor had said that he saw her once a month when she came and stayed at an hotel in London. He had told Dr. Connor that she had been convicted for forgery. Dr. Connor had said that he would not have treated her if he had known that she was being treated by another doctor. The doctor had said, when he interviewed him on Dec. 24th, 1925, that Miss Y. spent considerable time in London, as she was a rich woman and had property at Tottenham, and that he knew she was being treated by another doctor and was writing to her about it. He had said that he had kept no accounts for two years and that his charges were one guinea per visit, and that on Dec. 11th he had received a money order from Miss Y. for £8 at the rate of one guinea per visit. The officer said that he had inspected the register of the chemist who had been supplying the doctor and had found that, out of 13 orders that he had fulfilled, only one was to the prescription of Dr. Connor. The doctor had told him from his books that he had received 575 gr., but the chemist's register showed over 800. The doctor had explained that he must have made a mistake; that the morphine had been obtained for surgery use, and some of it had gone to Colonel S. G. Cross-examined as to whether he had used the exact term "register" in questioning Dr. Connor, witness maintained that he had. He knew Miss Y. by repute and believed that she throve on morphine and carried out her business well. He denied that he had stated in the criminal proceedings that Dr. Connor had been the ruin of one man.

The President pointed out that qualified medical practitioners were exempted from keeping a register if they kept a book in addition to a day-book.

Replying to the question of a member, through the chair, witness said that he understood that the charge of one guinea was for visits only, and that patients had to pay separately for drugs.

Counsel then called Dr. C. F. Dillon-Kelly, who stated that on the evening of March 29th this year he was called to see a patient, Miss B., in place of Dr. Moon, who practised near by. The patient's relatives had asked him to give her an injection of morphine as she was in a very excited state. She was putting on symptoms of bronchial asthma to an extent which, in his opinion, amounted to malingering. After talking to her for about a quarter of an hour he did not think fit to administer morphine, and Dr. Moon had later agreed with him. He had given her an order for admission to the Maudsley Hospital, but next day she had gone to the Lambeth Infirmary. Cross-examined, witness admitted that the patient showed some genuine signs of asthma and, in reply to a question from the President, stated that they were not as severe as they looked.

This closed the case for the prosecution.

Mr. Hawke then addressed the Council, setting forth the lines of the defence. Commenting on the principle laid down by Sir Travers Humphreys, he remarked that it raised the questions (1) of what a minimum dose was in the case of a confirmed addict, and (2) who was to be the judge of this minimum. He submitted that only a medical man could be permitted to decide these points and that no official idea, even of those who were performing the valuable service of combating a real evil, could be allowed to determine them. He considered also that there were certain considerations of which this principle did not take account—e.g., that addiction is in itself a disease. This view was confirmed in the report of the Select Committee of inquiry, who asserted that it might be necessary to administer dangerous drugs to confirmed addicts in non-diminishing doses in order to enable them to live normal and useful lives. Apart from this there were cases of people who, on account of some injury, lived in continuous agony, and it was surely permissible to administer drugs to these in mercy. In addition to relying on this principle, said Mr. Hawke, Sir Travers Humphreys had suggested an interpretation for certain facts which put a sinister construction on the conduct of Dr. Connor and implied that he was not influenced by medical instincts but by rapacity. In general contradiction to this view he had put into court a testimonial signed by many eminent and trustworthy people affirming the integrity of Dr. Connor. Nor had his client any financial reasons for rapacity. Many general practitioners treated drug addicts, but these formed a very minute percentage of their practices. Dr. Connor saw 400 patients a month; in fact, in February he had seen 521, and of these only five were drug addicts. The proportion averaged about 1 per cent. Again he could recall a police-court case against a drug addict for forgery, in support of which charge Dr. Connor had been called as a witness. The magistrate had actually placed the prisoner in Dr. Connor's hands for treatment, and Dr. Connor had looked after him for some time and had reported to the magistrate weekly. He did not hold up Dr. Connor as a man of very methodical habits of book-keeping. Nevertheless the whole bulk of the Home Office's information which had been used as evidence had actually been supplied by Dr. Connor himself, with the exception of the telegram. As regards the morphine that he had ordered for surgery use, his books showed when he had it and what he did with it. If Dr. Crosse had understood Dr. Connor to say that he would rather get rid of drug addicts by giving them prescriptions than attempt to cure them, then Dr. Connor repudiated the suggestion entirely.

In the case of Miss P., when Dr. Connor said that he had no record of having received a telegram from Scotland he was telling the truth. Dr. Connor had a great number of patients and it was quite reasonable that he should have forgotten it, and there was no evidence that he was seeking to conceal anything. These things had taken place many years ago. In fact, he had actually told Dr. Crosse that he had prescribed for this lady on the very day the telegram was said to have been sent, and the prescription appeared on the list which he had furnished to Dr. Crosse from his records. Dr. Connor had been prescribing for Miss P. 5 gr. every four or five days and this, in his judgment, was the right dose for her. He had allowed her 80 gr. at one time to take with her to Scotland. In answer to the question whether he had really made any effort to cure this patient, he had actually advised her to go into a nursing home and she had gone. Later on she had re-acquired the habit in South Africa and had come back taking as much cocaine and heroin as she could get hold of. He had re-started her with the dose that he thought proper, about 3 gr. a day, and from March to May had reduced her to about 1 gr. to 1¼ gr. a day, at which amount she had settled down. She had then gone to Dr. Vivian's home, and this doctor had reduced her to 1/10th of a grain a day. Dr. Vivian had said that another fortnight would have cured Miss P. The departmental report, however, stated that the most difficult part of the treatment was the reduction from the last ¼ gr. to zero. The significance of this was that when Miss P. was reduced to 1/10th of a grain she had bolted. He suggested that Dr. Connor had done all he could.

Of Miss B. he would only say that she was already taking morphine for asthma and that Dr. Connor had prescribed the amount he thought fit. The paucity of this amount had actually reduced Miss B. to such a state that she had had to be sent to hospital under the Lunacy Act.

As for Miss Y., every dose she had had was recorded in Dr. Connor's books, and, since these employed medical formulæ, it was natural that the police officer should not have been able to understand them. Dr. Connor had given him every assistance and had gone over them with him in detail. Miss Y., according to her own story given in the police-court, had been an addict for 20 years, and Dr. Connor had supplied her with amounts which might seem considerable. But she was an exceptional woman and, although she consumed even more morphine than Dr. Connor gave her, she was healthy-looking and freshly-coloured, and conducted her own business. Inspector Burnby had said that she throve on it. This was obviously a case of a confirmed addict receiving a minimum dose to enable her to lead a useful life.

Counsel did not know how the case of the Colonel fitted into Sir Travers Humphreys's principle. His spine had been crushed and he was suffering excruciating agony; presumably it was forbidden to give him morphine as no attempt was being made to cure him. Dr. Connor could say that he knew of an operation which would relieve the agony while leaving the patient permanently paralysed. Meanwhile he was administering the drug in order to relieve this agony. Counsel submitted that he was perfectly entitled to do so in the interests of humanity.

The case of Mrs. D. showed a definite attempt on the part of Dr. Connor to cure her addiction by diminishing doses. In December, 1922, when he had begun to treat her, she had been receiving 120 gr. of snuff in 18 days. By June 23rd, 1923, she was down to 48 gr. a month; in July she had received 34 gr. and in August 28 gr. Thereafter her average was 35 gr. per month. In 1924 she had left London for the North of England, and Dr. Connor had refused her request that he should continue to treat her except on condition that she remained under his personal supervision. Dr. Connor could bring evidence of cases of apparent addiction which he had apparently cured and who had not returned to him.

In regard to the police-court convictions Dr. Connor had been fined because out of a large number of prescriptions for Miss B. he had omitted the address from one. The other convictions were for failing to enter morphine in a special register. He was not a regular dispenser, and the properly qualified medical man was exempt from keeping such a register if he kept a day-book and any kind of a note-book to show what he did with his drugs. The Chairman of Quarter Sessions, in considering the appeal, had been satisfied that the utmost of which Dr. Connor had been guilty was gross carelessness, and the fines had been the utmost which could be imposed for inadvertence.

Counsel then called Dr. Connor on his own behalf, and Mr. Roome examined him. Dr. Connor testified that he had been 35 years in practice and four years at his present address, also that the proportion of his drug addicts to his other patients was less than 1 per cent.

Miss P. had come to him suffering from phthisis and had been accustomed to drugs before he knew her. He had treated her for symptoms as they arose. She had gone into a nursing home on his suggestion to be treated for the heroin habit, and had been cured. When she had come out of the home she had gone on a voyage to South Africa, but, since she had been able to obtain unlimited supplies of cocaine and heroin out there, she had come back as bad as ever. He had cut off her cocaine and had reduced her heroin gradually to 1¼ gr. a day. Below this he had not succeeded in keeping her. In his opinion his treatment of her was correct. His plan had been to get her down as far as he possibly could and then send her to a nursing home. He had made no concealment in his books of the drugs he had been giving her and had written a prescription in every case.

Miss B. had been suffering from asthma and was accustomed to taking morphine. She had not told him that another doctor had been prescribing for her. He had done his best to reduce her doses, but it had been a continual struggle. He had been genuinely trying to treat her addiction.

In Miss Y.'s case every supply, other than by direct prescription, had been in accordance with his books. Miss Y. was his wife's personal friend and visited them, and he had considered that she was under sufficient supervision. Sometimes, instead of sending her a prescription, he had given the chemist an order and asked him to post the bottle off; he had never sent her any himself. This was for Miss Y.'s convenience. When she ran short she became very excited, and it was bad for a drug addict to be subjected to worry.

The President asked the witness in what form he had given these orders to the chemist. The witness replied that sometimes he had ordered it in Miss Y.'s name and that on some occasions he had told the chemist to send it direct to her and had put it down as for surgery use. In every case he had made a record in his day-book.

Continuing his replies to examination, the witness said that Colonel S. G. had had his spine crushed and lived in continual agony. He had supplied him with large amounts at a time because he had found it difficult to get supplies in Paris, where he lived. It was impossible to cure him altogether. The witness had tried several drugs and morphia was the only one that had been any use.

He had reduced Mrs. D. to about 35 gr. a month; in 1924 she had left London for good and he had declined to continue treating her, as he had thought he could not look after her properly. He said that he had succeeded in curing four cases of addiction out of 12 in two years. He had never meant to suggest to Dr. Crosse that he gave addicts a drug in order to get rid of them.

In reply to cross-examination by Sir Travers Humphreys, witness maintained the truth of all he had said and denied any intention to conceal his supplies of morphine to Miss Y., also that he had known she had been convicted for forgery and was being treated by another doctor in Glasgow.

After the Council had deliberated in camera for an hour and a quarter the President announced the decision as follows:—

Mr. Samuel Grahame Connor, I have to inform you that the Council have given careful and prolonged consideration to the three paragraphs of the charge brought against you. The first and second charges are that under the circumstances set out you have prescribed or supplied dangerous drugs otherwise than in the course of bona-fide medical practice; the Council have not found these charges proved to their satisfaction.

The third charge is with regard to your convictions on three summonses under the Dangerous Drugs Act; these convictions have been proved to the satisfaction of the Council. Having regard to the judgment in the court of appeal, they have decided not to proceed to direct the erasure of your name from the Medical Register in respect of these convictions, but to postpone judgment on the question for one year, expecting you in the interval to obtain evidence from persons of position in the profession and otherwise as to your character, conduct, and methods of medical practice during that time, and on the proper request from the Registrar to supply the names of such persons who are ready to testify. You will be required to come before the Council this time next year on a date which will be notified to you, and to satisfy the Council on the points I have mentioned.

This, I think, is the first case brought before the Council on a conviction under the Dangerous Drugs Act, but they have already issued a warning notice that not only convictions but contraventions which have not been the subject of convictions may be dealt with by the Council as offences which render a registered medical practitioner liable to have his name erased. I will read the warning notice which, I take it, you have already received, but which I desire to read in public for the information of the profession.

"The contravention by a registered medical practitioner of the provisions of the Dangerous Drugs Acts and the regulations made thereon may be the subject of criminal proceedings, and any conviction resulting therefrom may be dealt with as such by the Council under the powers given them by Section 29 of the Medical Act. But" (and this, said the President, is the important point) "any contravention of the Acts or the Regulations involving an abuse of the privileges conferred thereunder upon registered medical practitioners, whether such contravention has been subject to criminal proceedings or not, will, if proved to the satisfaction of the Council, render a registered medical practitioner liable to have his name erased from the Medical Register."

I call your attention, Mr. Connor, to the terms of that warning notice, and although I know that upon the convictions which have been obtained you have already been punished, it is desirable, considering your methods of practice, that you should be put on probation for one year.

## REPORTS OF COMMITTEES AND OTHER BUSINESS.

### MONDAY, MAY 31ST.

At a meeting of the Executive Committee the official notification was made of the reappointment of the following members of the Council: Dr. Wardrop Griffith, Dr. H. L. Eason, Dr. A. F. Dixon, and Sir James Hodsdon.

The following names, erased under Section 14 of the Medical Act, 1858, were restored to the Medical Register: Thomas G. Burnett, George H. Coke, Ahmed R. W. Dina, Victor T. W. Eagles, Thomas V. Hunter, William A. McEnery, Henry G. H. Monk, Samuel K. Norris, Ernest A. Runting, Alice I. Shaw, Henry J. Villiers.

### *The Irish Free State and Medical Registration.*

The Executive Committee approved a suggestion, which had been received from the Rt. Hon. T. M. Healy, Governor-General of the Irish Free State, to the effect that a conference should take place between the representatives of the British Government and of the Irish Free State with a view to the making of permanent arrangements in the matter of medical registration.

### *Society of Apothecaries: Honours Certificate in Obstetrics.*

A communication was made recently to the Privy Council by the Society of Apothecaries as to the institution of a registrable diploma for proficiency in obstetrics, when a reply was sent that fresh legislation would be required before this could be done. The Society, having later applied to the Privy Council for guidance as to the issue of an Honours Certificate, that body referred the point to the General Medical Council, who now advised that it would be inexpedient for the Privy Council "to express beforehand an opinion on a subject which might come before them officially and perhaps judicially."

The Right Hon. Edward Hilton Young, D.S.O., D.S.C., joined the Council as Crown Nominee for five years from May 23rd, 1926.

The Finance Committee's report was laid before the Council by the Chairman and adopted unanimously.

Mr. Norman C. King was reappointed Registrar to the General Council and thanked by acclamation for his work in surmounting the difficulties created by the strike.

The session closed with a vote of thanks to the President.

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FLOATING REST HOMES ON THE VOLGA.—The Russian Red Cross reports a new development of prophylactic work against tuberculosis. The Moscow Health Department is organising this year fortnightly cruises along the Volga and Kami rivers in newly-repaired well-equipped vessels. It is hoped thus to provide holidays for 2400 workers this summer.

# Reviews and Notices of Books.

## CHRONIC INFECTION OF THE JAWS.

By STANLEY COLYER, M.D., M.R.C.P., D.M.R.E., Radiologist, Mildmay Mission Hospital; late Assistant Radiologist, Royal Dental Hospital. London: H. K. Lewis and Co. 1926. Pp. 76. 10*s.* 6*d.*

THIS book consists of a short radiological and clinical survey of the subject of chronic infection of the jaws. The author has had extensive experience of the clinical practice of dentistry and of general medicine outside his specialty, so that his conclusions as to the significance of the radiological aspects of jaw infections merit respect. Of the two parts of the book, the radiological study is the more interesting. During the last few years Dr. Colyer has put forward in various publications his views on the significance of dental radiographs. He believes that certain minute changes in the appearance of the bone are indicative of infection and have thus a definite diagnostic value. He carries the interpretation of dental films much further than do many of his colleagues, and believes that when correctly examined they may yield information which could not possibly be gained by unaided clinical examination. Dr. Colyer here gives an account of the normal film-picture of the teeth and jaws, as well as of the appearances occurring in disease, and the significance which he believes may be attached to these. Quite apart from the gross apical rarefaction so often seen, he describes small areas of rarefaction which may exist in the deeper part of the bone. According to the author these small areas can be distinguished from nutrient canals by the pattern of the surrounding bone. Dr. Colyer's views have attracted considerable interest among dentists, but while the appearances described by him can frequently be seen in good dental films, there is not yet unanimity as to their significance. It seems probable that much of what Dr. Colyer has to say is correct, yet until there is independent corroboration by methods of examination other than radiography, his views must still remain hypothetical. But before we can allow of a high value being attached to this appearance as a diagnostic sign, still more before we should allow it to influence treatment, there ought to be some corroborative evidence. When apical rarefaction as seen in a film is assumed to indicate infection, the facts that such areas are absent in normal jaws, and that the soft mass of tissue which frequently comes away when the affected teeth are removed shows microscopic signs of an infective process, give independent support to this assumption. There is prima facie evidence that the current value attaching to such an appearance in a radiograph is more or less justified, though even here there are obvious pitfalls, for the radiograph does not enable us to distinguish with certainty between an abscess and a mass of innocuous epithelial cells. If it were possible to provide corresponding confirmation of the accuracy of Dr. Colyer's interpretation of the radiographic signs of infection in the jaws, their value would be greatly strengthened. It might not be easy, but it should be possible to get films taken of the jaws in a certain number of post-mortem cases with pyorrhœa. If a film revealed those changes which Dr. Colyer considers to be indicative of deep infection, then sections could be made from the jaws which would either confirm or disprove his views. It is just because we are impressed with the possible importance of Dr. Colyer's hypotheses, and because we feel that his work is so suggestive, that we consider that further investigation by other methods is demanded.

A notable feature of the book is the large number of very beautiful reproductions of films showing both normal and pathological conditions. Dr. Colyer laments the inability of the process block to reproduce the finer details seen in a good film, but these illustrations are certainly among the best we have seen. The book should be studied by every dentist and radiologist. They may not always find themselves in agreement with the author, but they can *hardly fail* to be impressed both by his evident sincerity and the thoughtful and logical sequence of his argument. If the perusal of his book leads to a more careful examination of dental films by transmitted light in a viewing box, Dr. Colyer will have written to sound purpose.

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## DISEASES OF CHILDREN.

By H. C. CAMERON, M.D. Cantab., F.R.C.P. Lond., Physician-in-charge of Diseases of Children, Guy's Hospital. London: Humphrey Milford, Oxford University Press. 1926. Pp. 199. 5*s.*

THE object of the Oxford University handbooks is to provide a general survey of various branches of medical science. This object has been attained with striking success by Dr. Cameron in this little book, which is written with the charm and insight which his former writings have led the reader to expect from him. It is in no sense a text-book, and should not be used to replace one, but the reader will gain from it a more balanced view of the significance of the facts presented in text-books of pediatrics. The essential differences in the outlook with which the practitioner should approach the study of child and adult patients are set out in a lucid and convincing manner, and important points, such as the small part played by drugs in the treatment of infants, are brought to notice. Each chapter comprises a review of the special problems which arise in dealing with some period of development or some common group of symptoms, such as diseases of the newly-born, the various digestive disturbances, nervous unrest, catarrh, predisposition to disease, and the effect of conduct and management upon health. The chapter on diet, which includes artificial feeding of infants, is a triumph of condensation, and will greatly assist the student to assimilate the wealth of lengthy and contradictory accounts with which he will sooner or later be faced.

This book may be strongly recommended to students and to all practitioners who are concerned with the treatment of children. In particular medical men and women embarking on general practice will be wise to procure it, and will gain from it an insight which is not always obtained from hospital routine into some aspects of a most important branch of their work.

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*Kinderheilkunde.* By Dr. R. LEDERER, Vienna. Berlin: Julius Springer. Pp. 100. $1.65.

THIS monograph forms a unit of Dr. Julius Bauer's "Konstitutions-pathologie in den medizinischen Spezialwissenschaften," and has as its object the recognition and estimation of the constitutional element in growth, development, and disease in children. Purely hereditary diseases such as hæmophilia are not discussed. The term *constitution* is used in the purely genotypic sense, referring only to factors transmitted by the germ-plasm. The first chapter is concerned with general considerations on heredity, predisposition, and their connexion with the nervous and endocrine systems. In the chapter entitled Constitution and Growth various examples of diminished growth—dwarfism, infantilism, infantile atrophy—are considered, and an attempt is made to differentiate in each case the (endogenous) hypoplastic element from the conditioned or hypotrophic element. The most speculative and controversial part of the work is found in the chapter on Constitution and Habitus; the author adopts the classification of Sigaud in preference to that of Kretschmer, and attempts the division of infants and children into his four types—respiratory, digestive, muscular, and cerebral. The morphological characteristics of these types are described at some length and illustrated by photographs. The final section on Constitution and Bodily Condition contains an analysis of the ætiological factors of some pathological conditions characteristic of childhood, particularly the chronic nutritional disorders. Special attention is given to the work of Czerny and Finkelstein on hydrolability and the exudative diathesis. Recent work on the ætiology of rickets and of spasmophilia is reviewed in a well-balanced and critical manner; the author concludes that in spite of the apparent predominance of environmental or nutritional factors in the production of these states, there is a true endogenous constitutional factor consisting of a displaced relationship between the mineral constituents of the organism.

Dr. Lederer has presented with great ability his views on an aspect of medicine which is claiming an increasing amount of attention, and this monograph will provide much that is of interest to advanced students of the subject.

### PUBLIC HEALTH LABORATORY WORK (CHEMISTRY).

Eighth edition. By HENRY R. KENWOOD, C.M.G., M.B., F.R.S. Edin., Emeritus Professor of Hygiene, University of London. London: H. K. Lewis and Co. 1925. Pp. 369. 12*s.* 6*d.*

THE chemical requirements of students of public health are adequately fulfilled by Prof. Kenwood in a volume of less than 400 pages. This in itself is an achievement. The essentials of each subject are clearly defined and the descriptions of what to do and how to do it are lucid. Certain sections are really excellent; others give the impression that the author is not greatly interested in the subjects dealt with. It is regrettable that the first few pages are among the less carefully prepared passages. It is difficult to believe, for example, that Prof. Kenwood has ever himself obtained precipitates of ammonium salts, of nitrates, or of the chlorides of sodium or potassium which he has weighed after ignition in the manner here described, or that the descriptions of the balance, the spectroscope, the polariscope, which he appears to associate with the refractometer, and the burette represent his considered view of these instruments. On the whole, however, methods of examination of water, sewage, air, foods, and disinfectants are well described. The chapter on water analysis is especially good. The methods discussed are for the most part well chosen, and the real difficulty of interpreting results is largely removed by the many examples of analyses and reports. The author justly devotes attention to the microscopy of water. The plates of objects found in water are hardly up to the standard of the text. Dibdin's microfilter is not mentioned; it is a great improvement on the Blyth's tube which is described. The following sentence from this section of the volume might well be hung up in all water laboratories: "Between an undoubtedly bad water and an undoubtedly good water there are waters regarding which no opinions ought to be advanced unless advantage is taken of a careful local inspection to detect any possible source of pollution and both a bacteriological and a chemical analysis are performed."

The chapter on sea water is marred by two inadequate and unrepresentative analyses. This is the more to be regretted as the author and F. N. Kay Menzies have done excellent work on criteria of purity of sea water. The statement that sea water does not contain phosphoric acid might be challenged. The small amount it does contain is a determining factor in the growth and decay of plankton and thus has an important bearing on fish life. Brucine is not, we hold, a trustworthy reagent for detecting nitrates in sea water.

Sewage and mud are dealt with adequately in 12 pages, whilst 47 pages are given to air. No reference is made to Dr. J. S. Owens's excellent devices for determining suspended impurities in air or to the work of the Meteorological Office Committee on atmospheric pollution, though other methods of collecting suspended matter are given.

The author writes wisely on preservatives. He points out that their use facilitates an uncleanly, slovenly treatment of food and renders it possible to preserve articles in incipient decomposition for some time with every appearance of freshness. Some reference to hydrion-concentration and the pH of Sörenson might usefully have been added to the chapter on acidimetry and alkalimetry, and a more modern treatment of these subjects might with advantage be adopted in a subsequent edition. A bibliography would be a useful adjunct.

Throughout this text-book Prof. Kenwood shows sound judgment based on ripe experience.

### DICTIONARY OF APPLIED CHEMISTRY.

Revised and enlarged edition. By Sir EDWARD THORPE, C.B., LL.D., F.R.S. London: Longmans, Green and Co. 1926. Vol. VI. Pp. 791. £3.

ON the death of Sir Edward Thorpe in February, 1925, it was found that much progress had been made with the two last volumes of this dictionary. The final revision has been carried out by Dr. H. Forster Morley, and it is hoped that the final volume, containing an index to the whole work, will be published before the end of this year. The sixth volume of this magnificent dictionary deals with subjects comprised within the letters "S. Acid" to "Tetryl." Most of the articles have been written by authoritative contributors and constitute valuable summaries of the chief branches of applied chemistry. Among the subjects of especial interest to the medical man may be mentioned salicylic acid and its derivatives, santonin, the treatment of sewage, silver compounds, soaps, the sugar in blood and its estimation. Prof. Barger contributes an interesting and fairly comprehensive article on synthetic drugs; the information relating to taste, tea, and terpenes is well up to date.

In this dictionary reliable information can be quickly collected on almost any subject connected with the science of chemistry; moreover, the liberal use of references to published work indicates the direction in which more complete study can be made.

### BIOLOGICAL MEMORY.

By EUGENIO RIGNANO, Professor in the University of Milan, &c. Translated with an Introduction by E. W. MACBRIDE, D.Sc., LL.D., F.R.S. London: Kegan Paul. 1926. Pp. 253. 10*s.* 6*d.*

Prof. Rignano makes a bold effort to account for those differences between living and non-living matter which have already led to the production of so many theories. By memory he does not indicate the power of conscious recall of past experiences, but rather the power of repeating habits that date from the previous experience of the individual or the race, and this power is the characteristic of living tissue. He elaborates a centro-epigenetic hypothesis, in terms partly physiological and partly vitalistic, which calls for a trophic nervous energy passing from nucleus to nucleus and leaving in its path a "specific accumulation" which can originate by its decomposition exactly that kind of nervous current by the action of which it was deposited.

To the physiological reader such mixed hypotheses are provoking when they are produced as satisfying solutions of the great problem. But, fortunately, the author indulges in a friendly controversy with Prof. Bottazzi, a partisan of physico-chemical theories of life—which theories may be equally provoking to those who cannot be content with the effort to explain living and non-living matter by a single conceptual system. In his reply to criticism, Prof. Rignano frankly admits ignorance of the physiological basis of the mnemonic faculty or of the property of forming "specific accumulations." His theory is, he claims, merely an attempt to group together under one system a number of facts concerning heredity and kindred subjects for which no single generalisation has yet been offered. Thus viewed, his theory comes to be ranked as legitimate hypothesis and may be compared with Darwin's ideas of pangenesis and Weismann's theory of the continuity of the germ plasm. Like those, it may be expected to arrest attention and to stimulate further attempts to understand the basis of the phenomena studied.

# THE LANCET.

*LONDON: SATURDAY, JUNE 12, 1926.*

## X RAY TREATMENT OF CANCER.

X RAYS have now been tried in the treatment of malignant disease for 25 years; some of the early beneficial results were obtained with rays of long wave and correspondingly small penetrating power, the dosage being empirical. As time went on shorter rays of greater penetration were used in the hope of reaching deeply situated organs. During the war a method of accurately estimating the quantity of X rays emitted from a tube was worked out in Germany, and a system was evolved by which dosage could be measured, not only on the skin, but in the depths. The quantity of rays which any one portion of skin would tolerate was taken as the unit, and by means of crossfire through different ports of entry doses larger than could be borne by the skin were given to tumours at a depth. Reports of the results obtained by these massive doses, brought to this country by Dr. REGINALD MORTON and others five years ago, were more than encouraging, especially those from the clinic at Erlangen under Prof. WINTZ, where administration of massive doses of penetrating rays continuously for many hours resulted in the "clinical cure" of 80 per cent. of cases of uterine carcinoma so treated—that is to say, they were still well three years or more after. The Erlangen results were, in fact, so superior to those obtained by surgical methods that, as Dr. MORTON stated in a recent letter, surgery was abandoned at this clinic for cases of malignant disease in the female. The results obtained in this clinic were, however, not reproduced by others who tried the method; many patients suffered severely from the inevitable destruction of red cells and failed to recover their hæmic equilibrium; in some cases death followed as an immediate or remote result of the severe reactions.

The original Erlangen technique proved unsuited to the majority of cases seen in this country. For this reason, both here and in Stockholm under Prof. FORSSELL, a variation of the single massive dose method was introduced and the majority of workers now divide up the large dose over several days. There are grounds for believing that tissue cells, whether normal or malignant, are more radio-sensitive during certain stages of mitosis than at others, and by dividing the dose it is hoped to catch all the malignant cells at a susceptible time. There is also the constitution of the patient to be borne in mind. As Dr. F. HERNAMAN-JOHNSON puts it,[1] radiation treatment must be attuned to the estimated power of constitutional response in the individual patient. The results so obtained have been extremely variable, and even the keenest radiologists admit disappointment and the inability to forecast the result with any feeling of confidence. The cases which they undertake, however, are almost always in extremis or at all events beyond the reach of surgery. Dr. HERNAMAN-JOHNSON writes bluntly: "To British radiologists the treatment of carcinoma of the womb is of little practical importance, for they never see it." There is no material for the comparison of the results obtained by radiologists with those of surgeons, because they do not deal with the same kind of cases. There is, we believe, sufficient evidence to show that X rays (and, of course, radium) can do a great deal in certain types of cancer; rodent ulcer almost invariably disappears with small divided doses of X rays, and of all forms of internal cancer early carcinoma of the uterus is most analogous to rodent ulcer in its clinical behaviour. Prof. WINTZ himself has claimed a large measure of success in cancer of the breast. But in general the success so far achieved is not sufficient to justify radiologists in demanding that they should treat all early cases of cancer in advance of the surgeon. The position is complicated by the tendency on the surgeon's part, should the patient recover after X rays alone, to regard the diagnosis of cancer as incorrect, more especially as cases that are treated only by radiations are rarely sectioned. Spontaneous cure of well-established malignant disease is indeed not unknown. It may be taken as beyond dispute that massive doses of X rays will cause large tumour masses to disappear, but this experience is not synonymous with the cure of the primary disease. After irradiation of the primary lesion an existing metastasis may break into a fierce activity. The same phenomenon is, however, only too well known after operative treatment of a slow growing tumour, recurrences of an extremely active type making their appearance sometimes within a few weeks. There is strong evidence to indicate that any interference with a malignant growth may change its nature, whether this interference be operative or by means of radiations. Recent papers at the German X Ray Congress at Berlin seemed to indicate that, as regards cancer of the breast, the intensive treatment with rays of great penetrating power was not only ineffective but positively harmful. On the other hand, the statistics of the clinics in which rays of moderate penetration only were used were much more satisfactory, an experience which we believe is shared by the majority of radiologists in this country. Surgeons are divided in their opinions as to the value of post-operative irradiation of breast cases, and some of them have abandoned their use in breast cases after operation. Nevertheless, there are many surgeons who insist on post-operative irradiation as early as possible, not even waiting for the healing of the wound. LEWIS JONES recognised long ago[2] that in the X ray treatment of malignant disease there is "the strange phenomenon of the profound influence exercised by the rays, with a strange insufficiency so far as final cure is concerned." Cases are known in which the apparent disappearance of a local breast cancer after X ray treatment has reduced the breast to a condition in which operation could be undertaken, when section has still shown the presence of carcinomatous cells.

In some ways the position has not altered much since Mr. CECIL ROWNTREE wrote 14 years ago[3]: "Many surgeons consider X rays to be useless in the treatment of inoperable cancer. Some regard them as actually harmful when applied in frequently repeated doses; a few, a very few, have had experience of cases in which apparent cure has followed their application." And even in the present stage of knowledge there cannot be many radiologists who would press for sole responsibility in the treatment of early cancer cases on the strength of the admittedly good results of Prof. WINTZ in dealing with cancer of the cervix uteri. There are, however, a number of cases in which, though the cancer is early, operation is contra-indicated owing to some general cause. If these cases were submitted to irradiation on the lines suggested by Dr. MORTON and the results collected and published, the objects which he has in mind would be attained without contravening the principle, firmly established in this country, that early excision is the correct treatment for early cancer. Dr. PODKAMINSKY, in a much-criticised letter, quotes LEVY-DORN'S gibe that the proved successes of radiotherapy are two—epilation and castration. It is in fact the only agency we know which has a definite effect on malignant growth of all kinds.

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[1] Radiotherapy in Relation to General Medicine. Oxford Medical Publications. 1926.

[2] Medical Electricity. Edited by L. W. dth edition. 1926.

[3] Latham and English: A System of Tr

## THE DENTAL BOARD'S BUDGET.

THE Dental Board of the United Kingdom has the disposal each year of a large sum of money, for the Board prescribes a fee of £5 for the annual retention of any name on the Dentists Register, apart from names which appear there by right acquired prior to the Dentists Act of 1921. This Act laid down that any moneys received by the Board after paying the expenses of administration should be devoted to dental education and research or other public purposes connected with the profession of dentistry at the discretion of the Board. Strong pressure has been put upon the Board to reduce the amount of this annual levy upon its registrants, many of whom are not well off, and Mr. F. D. ACLAND, Chairman of the Board, devoted the larger part of his address at the opening of its tenth session on May 25th to a consideration of the Board's budget. Should the present retention fee be adhered to, the income of the Board will be above £50,000 for several years to come. The general expenses of the Board amount to about £12,000, and there is a possibility, happily not yet realised, of incurring heavy legal expenses in taking important cases to the courts. A reserve of £11,000 odd is earmarked for the teaching schools and, with the surplus of the present year, should meet their legitimate requirements for some years to come. A grant of £5000 a year is made to research, an amount which Mr. ACLAND would like to increase, impressed, as he is, with the approach of recent work to the edge of knowledge fundamental to prophylaxis. Dental health education is costing the Board about £4000 a year; post-graduate lectures account for another £1500, and students' bursaries already granted will amount to £21,000 a year when in full swing. Setting all these items of expenditure against the income derived from the payment of 9288 retention fees, "we could," said Mr. ACLAND, "with a little squeezing and a little going slow, and a little luck, and a little willingness to dip into reserve, get along fairly well with an annual retention fee of £4 instead of £5."

If this were all, the question of Dental Board finance would be simple, but there is much doing in the immediate future. As soon as dental benefit is provided under the National Health Insurance scheme —and the provision is imminent—the amount available from approved society funds for this benefit will be not less than £2,000,000 a year, over 10 millions of insured persons becoming entitled to demand it. The extra demand for dental service which will result must be met by a sufficient supply of dentists. Before the war an annual entry of rather over 250 licentiates maintained a slightly increasing Register of about 5000 practising dentists. Now the Register is over 14,000 and the number entering the schools last year was only 345. "I do not believe," said Mr. ACLAND, "that a Register of 14,000 will be permanently maintained unless 700 students a year enter the schools, and this number is just over double the present actual entry." He went on to speak quite frankly of the fact that in a few years' time the absolute monopoly of dental practice now enjoyed by dentists may be difficult to defend and that in consequence a strong demand may arise for a lower qualification. Dentists now have the tightest monopoly enjoyed by any profession, but no one complains of it, for the fees charged cannot be represented to be in excess of the value of the work done. But what if alongside an increasing demand for dental services there should be a considerable fall in the numbers on the Dentists Register? Hitherto the Board has done all in its power to make easy the path of the entrant to the dental profession. It has assisted 147 students who would not otherwise have entered the dental schools, the average annual cost of each grant being £122. Last March there was keen competition for bursaries and an attempt was made to help as many as possible with the money available; 27 grants were then awarded at an average annual cost of £106. Continuing on that basis 75 students a year would be assisted. If, as has been suggested, the basis of awards is changed and prize bursaries of £80 a year for four years are offered to 66 students a year, this much could be done, but not more with an annual retention fee of £4. Knowing that there ought to be a much larger dental entry, shall the Board, by reducing the present fee, put it out of its power to increase the number to whom help can be granted? Taking a long view, Mr. ACLAND concluded that it would be unwise in the general interests of the dental profession and of the public to reduce the fee permanently at the present time. The tax should, however, be as easy as is consonant with enlightened administration, and the first motion, after the Chairman concluded his address, was to ask the Finance Committee to consider and report what reduction, if any, would be necessary in the special expenditure of the Board on education and research to permit the retention fee to be reduced to £4 or, alternatively, to £3 in 1927.

## SPA TREATMENT.

OFFICIAL courtesy has made it possible for a representative of THE LANCET to make a detailed investigation of the position to-day of ten spas in Western Germany which were formerly visited by foreigners, and on p. 1164 is given a brief account of his findings. Speaking generally, he found the methods of treatment employed in German spas substantially the same as those of British spas. Bath treatments, it is true, are given on a vastly larger scale in Germany, but since one patient can only use one bath at a time, the individual derives little benefit from this circumstance. Whilst our representative found numerous English-speaking German doctors and hotel employees, few of the bath attendants spoke any English; consequently, unless the patient speaks at least a little German, difficulties might arise. Accessibility must be considered; the six-and-a-half hour crossing from Harwich to the Hook, followed by a considerable train journey, may be a serious deterrent to patients in indifferent health. On the other side is to be set the intangible but very real advantage of complete change of scene in many chronic maladies which require baths. Complete removal from the toils of business life and domestic worry, the breaking of a vicious circle of bad habits, these aids to effective treatment are more readily achieved in novel surroundings, and it is no doubt on this account that spa treatment has become international. The gain is mutual, for visits from other countries to home spas should be set against the visits of our own people to foreign health resorts.

The German spa industry has fallen on hard times. Deprived of its former rich Russian clientèle and of practically all British and French visitors, efforts are being made to resume relations with other nations. Most of the spas are State concerns, and the State is spending money freely in keeping them up to date. The cost of treatment is a serious consideration for most patients nowadays, and it is doubtful whether a cure in a German spa can be obtained as cheaply by British people as in a home spa if the additional cost of travelling is considered, especially if the patient cannot travel alone. The value of the mark now corresponds very closely to that of the shilling, and the cost of treatments in shillings and marks appears to be much the same. The charges of first-class hotels in Germany are lower certainly than in this country, the daily rate being from 12 marks upwards. The cost of the baths may be a trifle lower, although a mud or peat bath costs 7 or 8 marks—*7s. 6d.* in this country. Medical fees in the German spas are, on the whole, lower than in this country, a first consultation for 15 marks, followed by subsequent consultations at 7½ marks, being a fair average. The Germans would appear to have more faith in the specific action of their mineral waters than some of our own spa doctors. Water-drinking and bathing never occupy a secondary place, consequently accessory treatments are much less employed, and there is not the same tendency to try to speed up the cure. A month to six weeks is the shortest course prescribed. The patient will have four baths a week and see the doctor on two of the blank days.

Nauheim treatment is given in many of the spas, though probably nowhere so well as in Nauheim itself. In this line of treatment Great Britain cannot compete until some source of thermal carbonated saline is tapped—which seems unlikely enough. Artificially aerated baths can, of course, be given anywhere, but it should not be overlooked that this is only one, and by no means the most important, of the hydrotherapeutic measures which are so beneficial in certain disorders of the cardiovascular system. Ems treatment has not been attempted seriously in this country, though most German spas have their inhalatoria and their gargling and spraying rooms. Our winter climate is so unkind to patients with chest complaints that it is doubtful whether it would ever be successful except in the summer months. But with these two exceptions our representative did not find any treatments given at the ten German spas which cannot be obtained equally well at home. A "cure tax" is levied in all German spas, and whatever may be said for or against it in principle it undoubtedly enables the spa management to provide music and keep up gardens in a style beyond the means of most British spas. Orchestras are, however, now so expensive that no Austrian spas are providing music this year, and, unless conditions improve, it seems possible that Germany may have to follow suit. There is a large supply of pamphlets in English about German spas. These would be of much more use if they specified clearly in what treatments and for what complaints the particular spa specialises. The claims are so wide as to be of little use to the practitioner seeking guidance as to choice of spa. It usually results in the practitioner sending his patient to the spa at which he happens to know a doctor. Nor is great harm done thereby as the principles of balneological treatment are the same everywhere.

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# THE LISTER INSTITUTE OF PREVENTIVE MEDICINE.

AT the annual general meeting held on June 9th of the Lister Institute, it was announced that Prof. C. J. Martin has been granted three months sick leave, and that Prof. A. Harden has been appointed deputy director during his absence. Dr. Muriel Robertson has resumed duty after absence on sick leave. Dr. G. F. Petrie has been appointed bacteriologist in charge of the serum department in succession to Dr. MacConkey, who has retired after holding this post for 20 years. The Governing Body records its high appreciation of the services rendered to the Institute by Dr. MacConkey during this period. The Medical Research Council have continued to render support to the work of the Institute. Besides furnishing the salaries of the staff of the National Collection of Type Cultures, the Council has provided two whole-time workers in the department of bacteriology, Dr. H. M. Woodcock and Mr. P. Bruce White, one in the department of biochemistry, Dr. S. S. Zilva, and six in the department of experimental pathology, Prof. Korenchevsky, Miss E. M. Hume, Miss K. L. Soames, Miss M. Carr, Miss Henderson Smith, and *Miss Leigh Clare.* Dr. T. *Lumsden's* work on cancer is carried on under a grant from the British Empire Cancer Campaign. Accommodation for all these workers and the expenses of their researches are provided by the Institute. The various investigations in progress are summarised in the annual report. Prof. J. C. G. Ledingham is continuing his studies of the viruses of variola, vaccinia, and avian molluscum. It is hoped that the experimental findings may throw valuable light on the irregularities met with in converting small-pox to the vaccinial form—a transformation which involves increased virulence of the original virus for the rabbit and a diminished virulence for man. Dr. J. A. Arkwright has continued his observations on the variation of bacteria in vitro. Dr. H. L. Schütze is studying plague vaccine of various types. The work of this department includes also investigations into types of gonococcus, the pasteurisation of milk and bovine tuberculosis, scarlet fever and streptococci, hydrogen peroxide and bacterial growth, and other studies covering a wide field. The department of biochemistry is no less active. Prof. Harden is conducting experiments on the nature of the substance, contained in yeast and many vegetable extracts, which has a powerful stimulating effect on the growth of yeast and is considered by many workers to belong to the class of vitamins. Using lemon juice as the source of this material it has been possible to concentrate it considerably and to separate it from the antiscorbutic vitamin. The process of alcoholic fermentation, the synthesis of fat and carbohydrate by vegetable organisms, and the transformation of sugars are also being studied. In the department of experimental pathology the acid-base equilibria of blood has been investigated by micro-methods. Much time and attention has been devoted to the development of trustworthy methods for assay of the fat-soluble vitamins, here differentiated as the anti-ophthalmic vitamin A and the antirachitic vitamin D. It is now clear that vitamin D is not less necessary for growth than vitamin A. Some of the biological tests to be used in an international comparison of biological and colorimetric methods of titrating vitamin A are being carried out by Miss Soames assisted by Miss Leigh Clare in this department. The mechanism by which ultra-violet light acts upon the skin in animals is being studied by Miss Hume, Miss Henderson Smith, and Dr. N. S. Lucas. The recent publication from the laboratories of the Institute on foot-and-mouth disease, by Dr. Arkwright and his co-workers, has already been noticed in our columns, and this is true of many of the 47 publications issued from the Institute in the period under review. The income for the year was £50,000, mainly made up of £11,000 from interest on investments and £35,000 from sales of sera and vaccines and fees for investigations performed. There is an excess of income over expenditure of some £14,000, the expenditure being accounted for in detail as rent, salaries (£18,000), laboratory expenses (£4000), purchase, housing and feeding of animals, library and workshop expenses and repairs, renewals, and alterations. The stationery and printing accounts are modest and the travelling expenses singularly so.

# Annotations.

"Ne quid nimis."

## SIR FREDERICK MOTT.

As we go to press we learn with deep regret the death of Sir Frederick Mott. On May 26th he was taken ill in the train while travelling to Birmingham to visit the laboratory at Hollymoor Asylum. At the General Hospital, Birmingham, he was found to be suffering from widespread cerebral thrombosis from which he never rallied and to which he succumbed on June 8th. For some months he had slight premonitory signs, but characteristically he carried on with his duties as Honorary Director of Research on Mental Diseases to the Corporation and University of Birmingham without regard to his physical health. His death at the age of 72 will be deplored by all our profession, and especially will he be missed by those engaged in psychiatry and its large modern developments, for it was hoped that for many years he would still be in a position to stimulate and guide them.

His distinguished career and his scientific attainments give him a unique place in the medical world, but it is his genial personality, his wide range of interests, his humanity and enthusiasm, which will make his loss so deeply felt and regretted by all who have had the privilege of coming into personal contact with him. His reputation is international. He was well known abroad as one of the great scientists of England, who kept close touch with workers of all nations, and was the personal friend of many of them. His researches are quoted constantly in foreign literature, and he maintained to the last a keen interest in the work of other nations. In his own specialty of nervous and mental disease he was both clinician and research worker, equally at home by the bedside and in the laboratory, and in both displaying his sound sense and judgment of values. For many years he has inspired research workers, and his energy and enthusiasm has laid the foundation of a school of research into the physical factors underlying mental disease from which many valuable contributions have emanated. He was the first worker in England to confirm the discovery of the spirochæte of syphilis in the brains of general paralytics, and his labours and those of his collaborators have produced a great body of evidence concerning the changes found in the nervous and endocrine systems in dementia præcox. His researches were mainly concerned with morbid anatomy, but he also realised that this line of work had its limitations; he fostered biochemical and physiological inquiry in his laboratory, seeing clearly that the next step on the path towards the understanding of mental disease processes was likely to be taken in that direction. While his own work was chiefly directed towards investigating physical factors, he took a keen interest in the psychological and philosophical problems involved in mental and nervous disease, and the whole problem of the interrelation of body and mind. Some of his most recent writings have been on this subject. He always cared deeply for music, wrote on the brain and the voice in speech and song, and was recently still working on the comparative anatomy of the vocal apparatus and its cerebral representation; and he believed in music as a valuable aid in the treatment of mental disorder. It was largely owing to his energy and force of character that the scheme of his friend, Dr. Maudsley, for the establishment of a hospital for the treatment of early cases of mental and functional nervous disease came to fruition, and the Maudsley Hospital, to which the central laboratory of the L.C.C. mental hospitals was transferred, owes him a debt at least as great as to its founder, for his unfailing interest in all its activities.

A correspondent writes: "All those who have had the privilege of knowing him will always think of him with the deepest respect and affection. He took a human and personal interest in those who worked with him, was always accessible and ready to help, willing to hear any problem, and to bring his great range of knowledge to bear on its solution, thus inspiring everyone with his own enthusiasm. He was a great man as well as a great scientist, and a beloved teacher to the school he did so much to found."

The fuller obituary notice will appear next week.

## THE IMPORTATION OF FOOT-AND-MOUTH DISEASE.

The origin in this country of fresh outbreaks of foot-and-mouth disease apparently unconnected with previous cases of the disease has long been a standing puzzle to administrators and farmers in spite of all the labours of that great investigator Sir Stewart Stockman, whose obituary notice appears on another page. A recent outbreak in Scotland, where the disease is comparatively very rare, has led to the detection of carcasses of pigs imported from Rotterdam with lesions of foot-and-mouth disease on them. These carcasses had already been received at three different places in Great Britain, two of them bacon factories, and had reached this country in two or more different ships. As a result of this disclosure the Ministry of Agriculture has issued an order prohibiting the importation of carcasses from continental Europe after June 3rd. The term carcasses includes meat, hides, bones, horns, hoofs, blood, and offals, except in the case of fully cured meat and hides. There was a strong presumption that the carcasses discovered were actually infective, and it is stated that direct experimental evidence was obtained that this was the case. The exact path by which the infection passed from the carcasses to living animals is not quite clear, but the explanation would be very simple if portions of the meat were given to pigs to eat and the disease then spread to other animals; failing this route other hypotheses could readily be framed. Though it has often been suspected that infected fodder may introduce the disease, the evidence for or against this possibility has in the past been so conflicting that it cannot be said to have been generally accepted as a very probable or frequent source of danger, and other explanations have been as freely suggested with no more certain support from ascertained facts. The chief argument against the transmission by such means is the rapidity with which infected material has often been found to become inactive at ordinary temperatures, especially if exposed to sunlight and drying. The German Commission of 1898 could not show that the virus would survive drying at all. French workers, however, found that under very special circumstances virus may be dried and remain active for a long time. Recently it has been determined that the conditions for the viability of the virus in dried discharges or blood are much more common than has been supposed. Among other facts bearing on the problem which have come to light in recent years are the infectivity of the blood and all the organs during the initial fever and during the first day or two of illness, and the rapid disappearance of the virus from the skin, blood, and other parts of the body after the earliest stages of the disease. Nevertheless, the epithelium, discharges, and blood retain their activity at cool temperatures for a long time if removed from the animal during the height of the infective period. It follows, therefore, that blood, tissues, and especially local vesicles in carcasses of animals killed early in an attack are likely to be a source of danger for some time after slaughter, especially if frozen or chilled. It has been known for many years that experimental feeding of animals with recently infected fodder may serve to induce the disease, and the infection of pigs by feeding with contaminated offal has been strongly suspected in other countries. From the consumer's point of view, apart from the probably very slight risk of infecting human beings through diseased meat, the question arises whether efficient inspection of carcasses would not obviate the need for a complete embargo. The fact that the carcass may be infective without characteristic lesions or after removal of obviously diseased portions, and that blood and offals may also be infective largely disposes of this plea. The onus of proving freedom from infection must rest with those who would favour the continued importation of carcasses from neighbouring countries where foot-and-mouth disease is rife.

## THE BOTELHO REACTION FOR CANCER.

EVER since the Wassermann reaction gained recognition as a satisfactory aid to the diagnosis of syphilis the search for a method of serum diagnosis in cancer has been progressing. The latest claimant for notice is the "Reaction of Botelho," which forms the subject of a recent monograph by Beatrix Tedesco-Pollack[1] based on work done at the Hôtel-Dieu in Paris. The author of the reaction, whose identity is not made clear in the monograph, is, as our Paris correspondent has indicated, a pupil of Dr. Hartmann's, who, while making observations on the glycogen content of serum noted that certain cancerous sera gave a precipitate with the iodine-potassium-iodide solution used in the detection of this substance, a phenomenon which failed to occur with normal serum. The admixture of such a solution with the serum forms the basis of the reaction, which has been much refined by its originator and Mlle. Tedesco-Pollack. The test must be performed in an acid medium, and for this purpose either citric or nitric acid may be used; the latter is recommended. For the nitric-acid form of the reaction the following solutions are necessary:—

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| 1. | Nitric acid (pure at 36° Beaumé) .. .. | 1 c.cm. |
| | Physiological saline (7·5 per cent.) .. .. | 100 c.cm. |
| 2. | Metallic iodine, twice sublimated .. .. | 1 g. |
| | Iodide of potassium .. .. .. .. | 2 g. |
| | Distilled water .. .. .. .. | 210 c.cm. |

In its simplest form the reaction is performed as follows:—

Into a test-tube about 12 × 1 cm. are placed 3 c.cm. of the nitric-acid reagent and 0·5 c.cm. of the serum to be tested. Mix and then add the iodine-iodide reagent as follows. First pour in 0·5 c.cm. of the reagent and shake gently until the precipitate disappears. Wait 30 seconds. Add a further 0·5 c.cm. of the same reagent and again shake gently until the precipitate which reforms has either disappeared or sunk to the bottom of the tube. Lastly add a further 0·3 c.cm. of the reagent, again shaking gently and finally closing the mouth of the tube with the thumb and inverting it. A positive reaction is indicated by the persistence of a precipitate sufficiently dense to obscure the view of the filaments of an electric lamp when viewed through the test-tube.

Botelho, while working on his test, came to the conclusion that a high concentration of albumin in the serum tended to obscure a positive reaction, while vice versa sera low in albumin tended to give false positives. Mlle. Tedesco-Pollack has devised a technique for determining the albumin content of the serum by the refractometer and then by dilution with saline, bringing it to the optimum for the reaction. For details of this the original monograph should be consulted. Using this improved technique this worker claims to have been able to obtain positive results in over 90 per cent. of 145 cases of cancer, while 55 controls gave negative results in 85·5 per cent. of cases. These results are comparable with those achieved by their devisers with many other tests for cancer produced in the past, a fact of which Mlle. Tedesco-Pollack is well aware and which she duly notes in her extensive review of the subject. Since her monograph was compiled a further series of 200 cases has been examined at the Paris Radium Institute where Dr. Jacques Lavedan found a positive Botelho reaction in 85 per cent. of cases of breast cancer, but in only 35 per cent. of cases where the cancer was localised in the skin. He also found the reaction positive in certain cases of typhoid, diabetes, tuberculosis, and syphilis. The reaction accordingly, while it has some theoretical interest, does not as yet afford much practical help in diagnosis.

## A MEDICAL VISIT TO BIARRITZ.

WITH a view to familiarising British medical men with the advantages of Biarritz as a health resort a party of London practitioners was entertained by Dr. Plantier, during the Whitsuntide recess, at the large hydropathic institution which he directs. The "Hélianthe," as it is called, although situated only a few minutes' walk from the centre of the town, has an uninterrupted view of the Bay of Biscay and the Western Pyrenees in front and abuts on open country behind. The climate of Biarritz is pleasant all the year round; there is little difference in the reading of the thermometer in the sun and in the shade, and no sudden chill at sundown. A stay at an institution of this kind is indicated for those who need sea air together with an equable climate; it is beneficial for that class of patients, so well known to practitioners, who are suffering from the stress and strain of modern life, or who need a complete rest after a serious illness or operation. Sufferers from dyspepsia, obesity, gout, and diabetes are well looked after, as a feature of the establishment is the supply of special diet to all who require it. Care is taken that all directions prescribed by the patient's own physician are carefully carried out. The "Hélianthe" has its own private path to the sea beach where there is safe bathing, while for those who prefer to bathe in the hotel a large swimming pool is provided. Turkish and light baths are available, as well as all the modern contrivances of physiotherapy. The high insolation prevailing at Biarritz makes it an ideal centre for heliotherapy; Dr. Plantier has provided spacious terraces for sun bathers, who are enabled to take their cure under the pleasantest conditions. The staff of medical assistants, nurses, masseuses, and electro-therapists, as well as the hotel personnel proper, is all chosen personally by Dr. Plantier and affords a happy example of team-work. The percentage charge for service robs the day of departure of its sting for less hardened travellers.

## OLEOTHORAX.

OLEOTHORAX is attracting some interest abroad. Dr. M. G. Kuss gives an account[1] of this new method of treatment introduced by Dr. A. Bernou[2] in 1922, which he has found useful in pneumothorax, whether artificial or spontaneous, and in empyema. Briefly, the method consists in filling the pleural cavity, partially or completely, with a non-irritant oil which has an antiseptic action on the pleural membrane. Several varieties of bland oil have been used for the purpose. Liquid paraffin has the advantage of being easily sterilised and of high viscosity, whilst it undergoes no change in the pleural sac and is only slowly absorbed. Gomenol, an essential oil distilled from a species of myrtle and popular in France, has been added to the paraffin in view of its bactericidal value and also relative non-toxicity. As much as 400–600 c.cm. of oil can be injected into the pleura at one time, but in the case of a healthy pleura without effusion an initial injection of 10–20 c.cm. is considered advisable. The oil should be warmed before use. It can apparently be safely used as a means of replacement instead of air, and Dr. Kuss gives exact details of its employment for this purpose. The effect of bland oils upon the growth of *B. tuberculosis* has recently been worked out by Ross[3] and Tulloch in Dundee, and from their work it may be assumed that oil, injected into the pleural cavity, will have an inhibitory effect on the tubercle bacillus. This, however, is only one small side of the question. Bacteria, especially tubercle bacilli, are not necessarily free in the pleural fluid or pus; the majority of the organisms lie beneath the pleural endothelium in the lymphatics of the subpleural connective tissue layer, and it is impossible to decide.

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[1] Séro-Diagnostic du Cancer par la Réaction de Botelho, par Dr. Beatrix Tedesco-Pollack, Les Presses Universitaires de France, Paris, 1926.

[1] Revue de la Tuberculose, February, 1926.

[2] Vie Médicale, 1924, v., 149.

[3] Ross, G. R., and Tulloch, W. J.: Tubercle, 1926, vii., 465 and 521.

on our present information, whether or not the presence of oil on the free surface of the pleural endothelium affects bacteria in the subpleural layers. There is also the question whether oil, lying in the pleural sac for many weeks, will act as a foreign body and induce the production of adhesions. Finally, there is the question of the absorption of the oil. The small amount of work which has been done on the subject so far seems to indicate that the oil is absorbed, although slowly. The effect of such absorption has still to be worked out.

## TRAUMA AND MALIGNANT GROWTHS.

IN the clinical history of sarcomatous growths of bone there is often a story of a local injury having occurred at a comparatively short time before the first appearance of the disease. Speculation has been rife as to whether the injury has any causal connexion with the growth of the tumour and pathologists in particular have thrown doubt on this relationship, finding it difficult to explain how simple trauma can set in motion processes which ultimately lead to the formation of sarcomata. It has been asserted in standard text-books of surgery that it is a coincidence and nothing more when a growth arises in a limb which has been subjected to injury, or that the growth pre-existed and was lighted up by the injury into increased activity. Sixteen years ago Dr. W. B. Coley, whose experience in sarcoma of the long bones is unrivalled, brought forward a number of facts in order to demonstrate his belief that the growth of sarcoma of bone often did depend in some way upon antecedent injury. In a recent communication to the Southern Surgical Association of the United States, which is to appear in the *International Journal of Surgery*, Dr. Coley reaffirmed this opinion and brought forward additional cases which go far to establish trauma as the exciting cause of the formation of sarcoma. Of 360 cases observed by himself he obtained a history of previous injury in no less than 181, a percentage of over 50. The case-histories are given in detail and some of them are striking. For instance, a child of 5 fell against a corner of a table. She suffered from severe abdominal symptoms, for which a laparotomy was done on the third day. At this operation the surgeon found a hæmatoma in the transverse mesocolon. He let out the blood-clot and tied a bleeding vessel. The child recovered. Four weeks later symptoms recurred and in the abdomen was found a large tumour at the site of the injury. One month later exploratory laparotomy showed the abdominal cavity to be filled with sarcomatous nodules, apparently secondary to a large primary growth in the region originally contused. Dr. Coley cites cases where, following injury to a bone, a hæmatoma has appeared and been operated upon, where the X ray has shown no sign of malignant disease, and yet a few weeks later a growth has appeared. He points out that it is far commoner to get a history of injury in periosteal sarcoma than in central sarcoma and he endeavours to explain this difference. He cites the analogy of osteomyelitis, where it is well known that an injury to a bone may cause a latent infection to light up. Experiments with staphylococci thrown into the circulation in animals have demonstrated that infection of the joints and bones occurs almost with certainty when a local injury is produced afterwards. Dr. Coley himself believes that the association of injury with sarcoma is definite evidence in favour of sarcoma being due to external infective agents, the injury producing a local loss of resistance to infection. He suggests that local injury of the tissues gives rise to the formation of the specific factor required by the hypothesis of Gye and Barnard. Whatever may be the truth of the origin of sarcoma, no one can read these cases reported by Dr. Coley and remain unconvinced that trauma can play some part in its genesis.

## STATUS LYMPHATICUS.

THE diagnosis of status lymphaticus in cases of sudden death without obvious or adequate cause is perhaps not so popular as it was a few years ago, but is still sufficiently common to merit attention. Indeed, under the auspices of the Medical Research Council and the Pathological Society of Great Britain and Ireland a committee has been set up to inquire into the matter. A high proportion of these cases has followed the administration of brief anæsthetics for minor operations and it is difficult to avoid the conclusion that in some of them, at least, the diagnosis is open to doubt. Autopsy experiences in large cities lead to the conviction that a large number of the perfectly healthy children who are killed every year in street accidents exhibit hyperplasia of the lymphoid tissue throughout the body; yet the lorry or the motor-bus is so clearly the cause of death that status lymphaticus is never referred to. It is only when similar children succumb during operations for tonsillectomy or the like that a more recondite explanation is sought for. Apart from these instances, however, there are others when death follows upon a trivial injury or occurs with tragic suddenness from no apparent cause. Such a case is reported by Dr. James Miller in the *Canadian Medical Association Journal* for May. It is that of a young undergraduate, 19 years of age, who during a strenuous game of tennis on a bitterly cold day staggered a couple of paces and then collapsed, dying a few moments later. At the autopsy which was performed four hours later a condition of general lymphoid hyperplasia was found, with a persistent thymus weighing 14 g. The thyroid gland showed a mild condition of colloid goitre, and the brain was large and œdematous. Beyond some evidence of quiescent tuberculosis in the lung apices nothing else of any moment was discovered, and the diagnosis of death from status lymphaticus was given. On the face of it the diagnosis would seem fully justified, but on closer examination of the case certain omissions appear which diminish its value as a contribution to this important subject. It is strongly held by some authorities that a fine fatty degeneration of the cardiac muscle is the chief lesion in this condition and the determining cause of death, but no reference to the myocardium is made in this case. Again, E. Glynn has shown that sudden death may occur in the earliest stages of meningitis when the disease is practically not demonstrable except by bacteriological methods. Apparently, however, Dr. Miller made no bacteriological examination, and this is to be the more regretted since the patient had been in poor health for some time before his death. It is also noteworthy that a fortnight before he had had an unexplained fainting attack. The suspicion remains, therefore, that Dr. Miller's case is not one of true status lymphaticus, but is rather an example of cardiac failure from myocardial degeneration, if, indeed, an active infection can be ruled out. The question as to the existence of status lymphaticus is one of great importance. It is likely enough that the conception would not have fallen into the disrepute which it undoubtedly has had it not been, if not exploited, at least used as a cloak to cover ignorance. Only after the most thorough and systematic exclusion of other possibilities is it justifiable to make the diagnosis of status lymphaticus, and Dr. Miller's note will have fulfilled a useful purpose if it serves to point this moral.

## COMPLIMENTARY DINNER TO SIR STCLAIR THOMSON.

IT was a happy thought of the Section of Laryngology of the Royal Society of Medicine to give a complimentary dinner to the President of the Society, that leading laryngologist and sympathetic figure-head, Sir StClair Thomson. Upwards of 200 friends and professional colleagues, with their wives and guests of either sex, sat down to dinner on Friday last, June 4th, at the Hotel Victoria to display their attachment to Sir StClair Thomson and recognition of his merits as man of science and official. The guests included the President of the Royal College of Physicians of London, two Vice-Presidents of the Royal College of Surgeons of England, Sir StClair Thomson's successor in the presidential chair of the Royal Society of Medicine, and many well-known physicians and surgeons. The proceedings were throughout of a very cordial nature. Dr. W. H. Kelson, President of the Section of Laryngology, made a happy speech from the chair in which he outlined briefly the guest's career and his high professional and social qualities, to which Sir StClair Thomson replied in a very happy manner. His anecdotes were good, his Shakespearean quotations were apt, and his acknowledgment of the compliment paid to him was a model of what such difficult speeches should be, both in sincerity and in the turning of phrases. His last quotation was Byron's celebrated exhortation, "On with the Dance," and there being no more speaking beyond the vote of thanks to the chair, the company took the floor. A material memento of the occasion was provided by the presentation to Sir StClair Thomson of a massive silver drinking-cup.

## OBJECTS RESEMBLING SPIROCHÆTES.

SINCE the discovery of the spirochæte as an agent of disease, and coincident with the extension of its importance in medicine from a very restricted to a wider and expanding field, mistakes have over and over again occurred from the technical difficulties in studying these organisms and in their demonstration and culture. In staining, many of them—most notoriously that of syphilis—have so little affinity for dyes that their tinctorial demonstration in tissues is impossible, and it is only by silver impregnation methods that they can be shown. These methods are uncertain in action, and apt to be complicated by the occurrence of precipitates which obscure observation and may lead into errors, whilst the affinity of certain tissue elements for silver salts may result in the bringing into prominence of fibrils which resemble the spirochæte and have from time to time been erroneously mistaken for them. Culture, the main line of examination pursued by the bacteriologist, is in regard to these organisms laborious and uncertain, so that it is at present rather a hazardous method of research than a helpful procedure in clinical diagnosis. In these straits recourse is widely made to the dark background methods of illumination, which enable the organisms to be seen in their living state and their movements to be studied. This method, which is perhaps the most satisfactory in our existing armamentarium, also has its limitations and its pitfalls. Chief amongst the former is the fact that it can only be applied to materials relatively free of particles other than the organisms. Thus, whilst useful in studying the juice of a chancre or the organisms found in a culture, it cannot be applied to a tissue emulsion. Amongst the latter difficulties is the fact that certain bodies may occur in experiments which, whilst resembling spirochætes, are not these. If blood cells be kept for some time in culture, or other fluid media, long trailing streamers of the envelope material of the red cells appear in connexion with them, and, floating out in the fluid under the influence of molecular impacts, take on movements not unsuggestive of autonomy. During the war a pathologist observing such "streamers" became convinced that in them he had discovered a microbic cause for trench fever and many other conditions as well. In a recent paper[1] Noguchi, who has contributed so much to our knowledge of spirochætes, points out that in impure cultures of these organisms the detached flagella of motile contaminating bacilli may very closely resemble spirochætes, and records that for some time he himself mistook these structures for aberrant forms of *Treponema macrodentium*, with which he happened to be working. Further, many spirochætes develop in cultures well-marked terminal flagella which, becoming separated from the organism, may closely resemble a minute spirochæte. It is well that these sources of error should be recorded, as, since such able and accustomed workers are liable to be misled by them, they are worthy of being given every publicity so that others, who with less experience are working in the fields in which they are met, may be forewarned.

## BIRD DROPPINGS.

IN his recent annual report as medical officer of health for the City of London Dr. W. J. Howarth drew attention to the nuisance caused by the increasing number of pigeons, especially in Leadenhall Market, where their excreta contaminate the stalls above which they congregate. Although there is no actual evidence of danger to health there are considerable possibilities of contamination of food, and Dr. Howarth considers that legal powers to reduce the number of pigeons may be desirable. Those engaged in safeguarding the purity of water-supplies have long recognised that the excreta of certain birds may be a cause of contamination of the water-supply and must be kept in mind as a possible explanation of anomalous bacteriological findings. The excreta of pigeons and gulls, and probably many other birds, contain both colon bacilli and streptococci in large numbers and of types which cannot be differentiated from similar organisms derived from human or animal sources. Sir Alexander Houston has pointed out[2] that while the diving gulls (e.g., guillemots) feeding on clean sea water in non-polluted areas do not harbour the colon bacillus in their intestines, the common gulls seasonally forsaking the sea and feeding on all sorts of garbage inland contain this type of organism in their fæcal discharges in enormous numbers. The droppings of gulls frequenting the West Middlesex Waterworks were found to contain at least 1,000,000 typical colon bacilli per gramme. Taking 10 g. of droppings per day it will be appreciated that the resulting *B. coli* contamination of the water-supply, even if it has no immediate epidemiological importance, may interfere seriously with the correct interpretation of bacteriological water tests and obscure the chemical tests by introducing considerable quantities of albuminoid ammonia. These difficulties are most likely to be met with in upland surface water-supplies. Happily there is little evidence of the presence of pathogenic bacilli in the excreta of birds. The only strains known to have been associated with human disease are certain members of the Salmonella group, of which *B. psittacosis* is the most important. This organism has been isolated from parrots and the disease has spread to man. In April, 1892, an extensive outbreak occurred in Paris with 42 known cases involving 14 deaths. Serologically this strain has now been identified with *B. aertrycke*, the bacillus most commonly associated with outbreaks of human food poisoning. Salmonella strains have also been isolated from pigeons and other birds. With our present knowledge it may be said that while contamination from bird droppings must be regarded as a nuisance there is no scientific evidence associating such contamination with disease causation.

THE second Victor Horsley Memorial Lecture will be given in the Council Room of the British Medical Association House, Tavistock-square, on Friday, July 9th, at 5 P.M., by Mr. Wilfred Trotter, who has taken as his subject the Insulation of the Nervous System. The chair will be taken by Sir John Bland-Sutton, F.R.C.S. Admission is free to practitioners and students on presentation of a visiting card.

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[1] Jour. Amer. Med. Assoc., vol. lxxxvi., No 15, May 1st, 1926.

[2] Seventeenth Annual Report to the Metropolitan Water Board. 1923.

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A PLAZA THEATRE BED.—The staff of the Plaza Theatre have endowed a bed in Charing Cross Hospital, and last week a tablet commemorating the event was unveiled by Miss Dorothy Gish. The nucleus of the cost was provided by gratuities for the employees placed by visitors in a box at the theatre.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXXVI.—THE TREATMENT OF ANÆMIA.

### I. Pernicious Anæmia.*

Before undertaking the treatment of a case of pernicious anæmia it is essential to realise what that condition means. Various views obtain regarding the pathology of the disease, but the outstanding fact is that the patient has an insufficient supply of hæmoglobin for his respiratory needs. His tissues lack oxygen. Moreover, the bone-marrow is poisoned and the hæmoglobin which it produces is contained in red corpuscles unduly large, so that the central portion is handicapped as a respiratory agent. The heart is enfeebled. The gastric juice lacks HCl. The kidneys are damaged. The nervous system may be impaired and the tissues offer a very poor resistance and little reaction to infection. A remarkable feature of the disease is the incidence of remissions and relapses. The remissions are often attributed to the last medicine given. It is a curious fact that nearly all cases first come under observation with a red cell count round about 1·2 millions per c.mm. and 30 per cent. of hæmoglobin.

*Rest in Bed.*—Obviously, a patient who has less than one-third of his normal complement of hæmoglobin—and that badly arranged—should be kept in bed. The duration of the stay in bed depends upon progress. In a first attack events move more quickly than in relapses. Death may occur in a few weeks. More likely a remission takes place and in this case every endeavour should be made to persuade the patient to remain in bed till the hæmoglobin percentage reaches 60. He will never again get so good a chance of recovery. In a relapse 60 per cent. may be too high an aim. If hope of its attainment be too long deferred it may be well to allow the patient to get up when the hæmoglobin reading reaches 40. This may become the average reading in patients leading useful if not very active lives.

A patient confined to bed should get as much fresh air and sunlight as may be available.

*Removal of Septic Foci.*—Whether infection acts by poisoning the red corpuscles (excessive hæmolysis) or by poisoning the bone-marrow (deficient hæmogenesis) or merely by lowering the general health, it should be dealt with. Teeth affected by caries or associated with pyorrhœa should be treated as early as possible. The nasal cavities may require attention and any infection of the genital tract should be treated. In initial attacks and in severe relapses one may attempt to alter the intestinal flora by a milk diet for 10 or 14 days, giving an enema daily. β naphthol, gr. x., in cachets may also be given.

*Diet.*—For ten days, or longer if jaundice persists, milk and light farinaceous food only are allowed.

There is sometimes a degree of gastric irritation which makes feeding very difficult. In these cases peptonised milk, whey, or dilute whisky may be tried. After ten days, in the absence of jaundice or gastric derangement, chicken, fish, and custard may be added. Later, ordinary food may be allowed, but the amount of red meat should always be restricted. A little light wine may be given with the midday meal as a stimulant to appetite. An egg-flip containing two teaspoonfuls of whisky or brandy is a useful " extra."

Meat extracts and soups have a certain use as mild stimulants in acute cases, but they are rich in extractives and for routine use they are better avoided. In my post-mortem experience I have never seen a case of pernicious anæmia with healthy kidneys.

*Gastric Symptoms.*—The diminution or absence of HCl is an indication for its administration. Small doses of the dilute acid may be given after meals. Shaw (*Quart. Jour. Med.*, 1924, p. 319) has suggested the "continuous" administration of HCl by giving it in lemonade, to be sipped during an hour after taking food. Some cases improve, but it is noteworthy that large or even moderate doses are not well borne. In cases of severe vomiting alkaline sedatives are of service. The citrate of bismuth and ammonia, milk of magnesia, and similar preparations are useful. Gastric lavage is too severe a measure for patients desperately ill and morphia is not well borne.

*Arsenic.*—In spite of diversity of view concerning the pathology of the disease and the numerous alleged remedies which have been boomed from time to time, arsenic continues to be the therapeutic mainstay of the overwhelming majority of medical practitioners.

There is a tendency to reduce the large doses which were formerly given. I seldom give more than 5 minims of Fowler's solution thrice daily and find that in this form arsenic is well tolerated ; if it be desired to combine arsenic with HCl or iron the liq. arsenici hydrochlor. should be used. It is always well to interrupt arsenical treatment at intervals. After a month it should be dropped for a week. The tongue should be inspected frequently for any sign of irritation or the silvery appearance that indicates that the limit of tolerance is approaching. The onset of sickness or diarrhœa indicates that arsenic should be stopped. Dropsy and œdema may be caused by arsenic and their onset should not be accepted without question as features of the disease. Arsenic also appears capable at times of causing or maintaining a febrile condition.

When even small doses of arsenic set up gastric irritation *intramuscular* or *intravenous* administration may be tried. Fowler's solution (3 to 5 minims well diluted) may be injected into a muscle with the usual precautions to avoid nerves and tendinous attachments. The gluteus maximus one inch below the iliac crest towards the outer side is a useful site. Obviously a patient will not hanker after frequent repetition of this procedure and the physician has to be content with one injection daily. A similar disadvantage is associated with intravenous injection. This method may be preferred to the intramuscular route when the veins are reasonably prominent, but the technical difficulties may be considerable in a very bloodless patient. Three or four minims of liq. sodii arsenatis in 5 to 10 c.cm. of physiological saline solution may be used. The desire to give arsenic in large doses without its unpleasant effects has led to extensive trial of the various organic preparations. Cacodylate of soda, atoxyl, soamin, and others have all been used, but there is no convincing evidence that they confer greater benefit or do less harm than inorganic arsenic. Indeed, they may be more dangerous, since their toxic effects are more insidious in onset and sometimes of greater severity and duration. Herpes, pigmentation, neuritis, blindness, febrile attacks, and gastric disturbance are among the effects of heavy or prolonged dosage, and idiosyncrasy is not infrequent. The salvarsan group has had an abundant trial. Novarsenobillon is probably the least toxic, but its efficacy does not equal that of the inorganic forms. Granted a case in which arsenic is not tolerated by the mouth I would first try N.A.B. and, if possible, I would prefer to give it intravenously rather than intramuscularly. The pain of an intramuscular injection is a factor of some importance in the case of enfeebled patients.

There is no advantage in continuing to give arsenic after the blood count has reached the normal.

*Iron.*—In the average case of pernicious anæmia iron is not only useless, but often causes gastric irritation and headache. It is, however, of service in cases which are in remission. In these cases new red corpuscles may be rejuvenated rapidly and apparently the production of hæmoglobin cannot keep pace with them. The result is that the young corpuscles are poor in hæmoglobin. The criterion of this is the colour-index (the percentage of hæmoglobin divided by the percentage of red corpuscles taking five millions per c.mm. as 100), which should be estimated once a week.

Whenever the colour-index falls below 0·8 iron should be given. I have once or twice seen cases which had been making poor progress begin to improve after the administration of iron although the colour-index was high. This is exceptional, but the expedient may be worth a trial. The form in which iron is given matters little as long as an adequate quantity can be tolerated. Blaud's pill capsules and the tincture of perchloride, well diluted, are among the best.

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* An article by Dr. Goodall on the Treatment of Chlorosis and Secondary Anæmia will appear in our next issue.

*Bone-marrow.*—Bone-marrow, red and yellow, raw and cooked, simple and compounded with spleen juice or other product of some irrelevant viscus has often been advocated and remissions following its use have been recorded. I have never been able to associate improvement with the use of bone-marrow.

*Normal Horse Serum.*—When arsenic fails horse serum is worth a trial. It is difficult to understand how it acts, but my favourable experience of it seems to amount to more than coincidence. It may be given hypodermically or even by the mouth in doses of 10 c.cm. When given by the mouth the nature of the substance should not be mentioned to the patient, as the idea of taking the serum may induce nausea.

*Transfusion.*—It is very difficult to assess the value of transfusion. Sometimes an apparently brilliant result is obtained, but the improvement is seldom long maintained. Much more frequently the effect is very slight and often no result may be obvious

In this connexion I may quote a remarkable case In 1910 a man, aged 46, complained of weakness and slight jaundice of five weeks' duration. His red corpuscles numbered 1·02 millions; hæmoglobin percentage was 30. He did not improve and it was resolved to try transfusion His wife's blood was of suitable group and rather over a pint was injected. Almost immediately the patient began to suffer from severe rigors, his temperature rose to 104° F., and the urine became deeply blood-stained. The blood films showed an enormous number of nucleated red cells. After being desperately ill for two days the patient began to improve. He was able to return to work as an electrician and remained well for five years. Weakness and anæmia then returned and advanced rapidly. Transfusion was tried, this time from another donor There was no untoward result, but no benefit followed and the patient died.

When transfusion is employed the citrate method is the most convenient. Sodium citrate 3·8 per cent. added to blood in the proportion of 1 to 10 prevents coagulation and is isotonic. Transfusion from donors suffering from polycythæmia has often been tried, but while the donor may be benefited there is no advantage over ordinary blood to the recipient.

*Vaccines and Sera.*—These substances are mentioned not from any belief in their efficacy, but because they have been extensively tried and inquiries regarding them are often made. When there is a septic focus which cannot be successfully treated by surgical means, the administration of an autogenous or homologous vaccine is legitimate. It must be remembered, however, that in pernicious anæmia the bone-marrow is so involved in domestic trouble that it has little reserve for dealing with a new stimulus. Since the success of a vaccine depends upon adequacy of reaction, the hope of benefit is but slight. A belief that the source of the causal toxin is the intestine has led to the use of autogenous vaccines made from the fæces. In my experience these are always useless and usually poisonous. Violent reactions may occur, but the patient does not improve. Antistreptococcus serum has been given under the mistaken idea that it meets a causal factor. It is useless and sometimes harmful.

*Splenectomy.*—This operation has no justification either in pathology or in experience. Probably only the more successful cases have been published, and the results of these are less favourable than those obtained by safer methods.

*Complications.*—Many conditions may complicate pernicious anæmia and must be dealt with on their merits. There is no special measure which tends to ward off the nervous conditions, such as combined sclerosis which often follow. It is important not to precipitate them by the excessive use of arsenic. It is worth mention that the pallor and facies of pernicious anæmia sometimes lead to the overlooking of a concomitant condition of hypothyroidism, and even when the latter has not been obvious I have sometimes seen success after a few speculative tablets of thyroid.

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Lecturer on Clinical Medicine, University of Edinburgh.

# Special Articles.

## UNIVERSITY OF EDINBURGH.

### OPENING OF THE RECONSTRUCTED DEPARTMENT OF SURGERY.

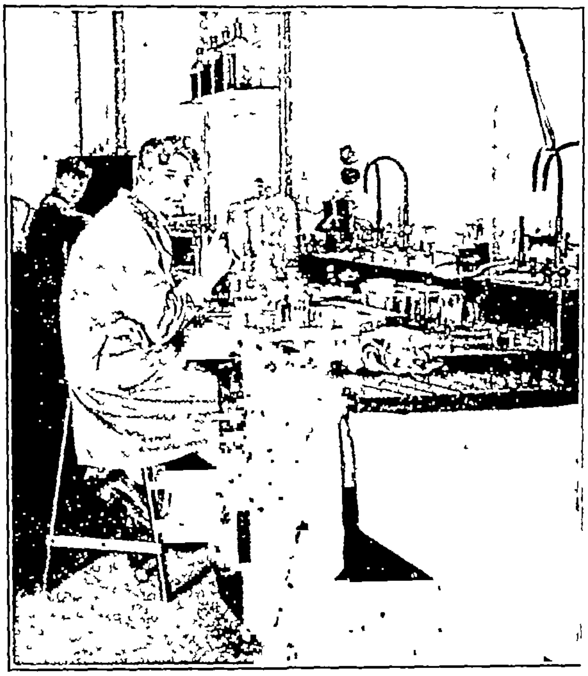
ONE of the principal events of the Bicentenary Celebration of the Edinburgh Faculty of Medicine is the formal opening of the reconstructed Department of Surgery to be performed by Sir John Gilmour, Secretary for Scotland, on Friday, June 11th. It was in July, 1924, that Prof. D. P. D. Wilkie was appointed to the chair of surgery under what were for Edinburgh new conditions—namely, on a "modified whole-time basis"—on which the professor devotes the major part of his time to his university and hospital duties, but is permitted restricted opportunities for private practice. The medical buildings of the University of Edinburgh were designed and built in the days when the didactic lecture formed the essential part of university education. Whilst extravagantly equipped with splendid auditoria, the building was ill-suited for the practical teaching and research which are the main functions of modern departments in all branches of medicine. Whilst in the departments devoted to the earlier subjects of the medical curriculum—e.g., physiology—well-equipped laboratories had been added, in that of surgery a small museum and a smaller laboratory for histological work were the only facilities available. A complete surgical department must make provision for the carrying out of two main functions—teaching and research. It was decided, therefore, to utilise the existing space, and by reconstruction to provide accommodation for practical and demonstration rooms and for an adequate teaching museum; for a research department a very considerable additional space was required.

#### *Teaching Department.*

The old surgical lecture theatre was large and lofty and was provided with a gallery. By flooring it across at the level of the gallery, an excellent auditorium was provided above and space for practical rooms obtained below. Three practical rooms were thus provided for the teaching of bandaging, surface anatomy, and operative surgery; one of them was fitted out for microscopic demonstrations. A small theatre, formerly used for tutorial classes, was converted into a teaching museum, extra wall space being obtained by building a gallery. The room which formerly served as a museum was fitted out as a students' reading room, in which naked-eye and microscopic specimens, illustrative of the subjects being dealt with in the lectures, could be displayed and studied at leisure. The old laboratories, consisting of three rooms on the ground floor of the building, were converted, one into a room for mounting museum specimens. The second room was turned into a photographic mounting room. The third room was divided into (*a*) a workshop with lathes, &c., (*b*) a chilled room for keeping bodies for the operative surgery class. To provide ready communication between the various parts of the Teaching Department and between it and the Research Department, an electric elevator was installed. In the basement of the building two rooms were equipped for all forms of photography. Wherever possible a clinical photograph and a microphotograph accompany each pathological specimen in all demonstrations. A very complete outfit of apparatus for microphotography, copying, enlarging, reducing, and for the rapid making of lantern slides was set up.

Whilst recognising that in the wards of the hospital the main burden of surgical teaching must be carried out, it is essential that the student should have a *thorough grounding in surgical principles* in applied anatomy and in surgical pathology. The teaching in the university department is designed to fulfil these objects. The student in his third year of study attends a course of lectures and demonstrations on the principles of general surgery, and is given practical instruction in bandaging and the treatment of fractures; in his fourth year he returns for a course of lectures and demonstrations in regional surgery and surgical pathology. For senior students in their final year a special course on surgical pathology is given by the senior assistant in the department, who is the university lecturer on this subject. In his fifth year the student attends a course on operative surgery. This class is divided into sections and the students perform on the cadaver the standard operations of surgery. In the summer session a special course on surgical pathology is held for graduates. In this course the professor and six other lecturers take part, each devoting himself to some subject of which he has made an especial study. This class offers an admirable opportunity to present the latest developments of surgical research and is of value both to teachers and taught.

FIG. 1.



Surgical Research Department, Histological Laboratory.

*Research Department.*

Accommodation for a Department of Experimental Research was obtained by the conversion of a two-storey building adjoining the Teaching Department. This building had been erected three years previously as an Anatomy Department for women students, and consisted of two very large and well-lighted dissecting rooms. By portioning off these rooms into smaller units and equipping them for the various needs of a Research Department, facilities were provided without the erection of a new building. The objects aimed at in the reconstruction of this building were:

(1) Facilities for the routine histological and bacteriological investigation of all pathological material from the clinical unit of the department and for the intensive study of certain material of special scientific interest from other clinical units of the hospital.

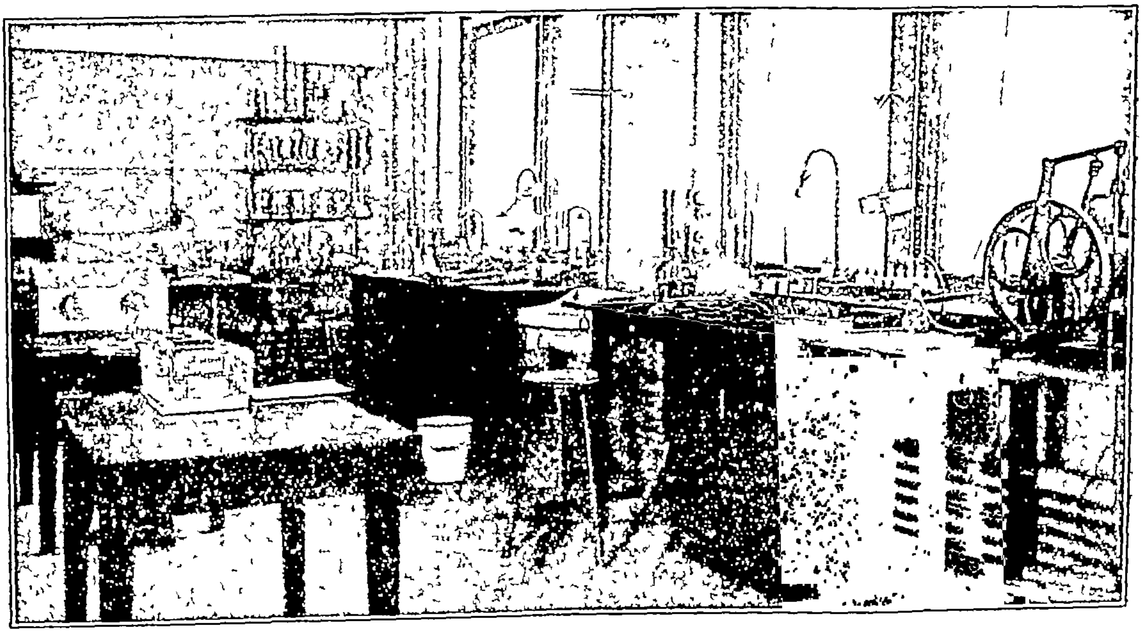
(2) The provision of a fully equipped Operating Department with all radiological and recording equipment, where operations could be conducted under conditions equal to, if not superior to, those found in a modern hospital. This part of the department is to be available to workers, not only in the Surgical Department, but also to those in all research laboratories of the University. It is then hoped that a fuller collaboration and liaison may be established between workers in the various branches of medical research.

(3) The provision of accommodation for individual research workers engaged either in experimental research or in the working up of material from clinical cases.

(4) The provision of a common room and library where workers may meet and where informal discussions will be held.

*Ground Floor* (*Plan A*).—On entering the research block we pass from the hall into a room for the reception of all fresh pathological material. This

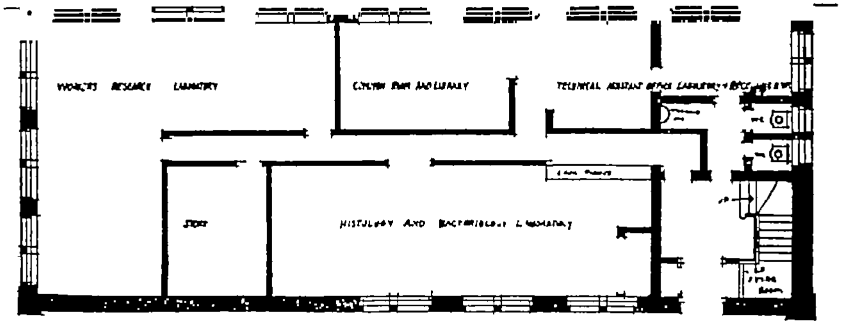
FIG. 2.



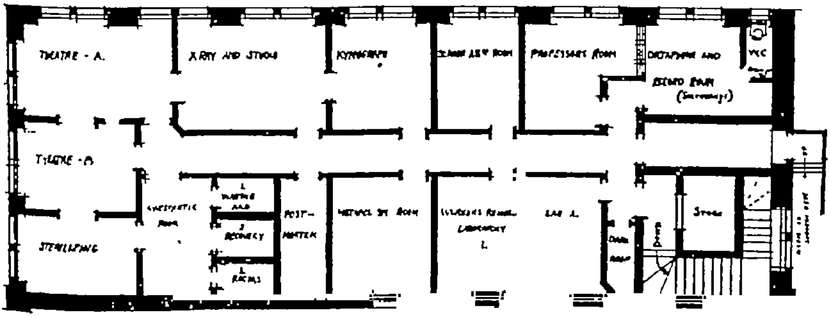
Surgical Research Department, one end of large Research Room.

room is provided with a large, shallow sink for the cleansing and assorting of large post-mortem specimens, with a broad bench on which material is indexed and filed by the chief technical assistant, whose room adjoins, before being passed on to the laboratory. On the ground floor is a large laboratory (Fig. 1) in which the technical workers carry out all routine as well as special histological and bacteriological work. It is equipped for all forms of section cutting, including large sections of entire organs. Beyond the technical laboratory is a store room for laboratory materials and special apparatus. Next we enter the *research laboratory* for graduate workers (Fig. 2). It is fitted with benches for 12 workers with cupboard accommodation for each on the opposite wall. Each bench is fitted with a sink with hot and cold water, with electric light and power plugs, with a two-way gas cock, and with an air pressure tap and suction tap. Air pressure and suction are laid on throughout the entire building, the force being generated by motors in the power house. At the ends of this room, which is of L shape, are electric paraffin ovens, incubators, centrifuge and Gerrick pump. In this room the current scientific journals are available and standard works of reference are stored. The workers are encouraged to meet here daily for informal discussions and to exchange views with workers in other department.

PLAN A.—*Ground Floor.*



PLAN B.—*First Floor.*



*First Floor* (*Plan B*).—On this floor are the private laboratories of the professor and the assistants in the department. Each is fitted with the same equipment as the large laboratory. A kymograph room is equipped with recording apparatus which is of portable type and can be moved to the operating theatres. In direct communication with both the kymograph room and the larger of the two operating theatres is the X ray room. In this is installed the full apparatus for radiography of both the human subject and experimental animals. A small emergency dark room for rapid developing is placed on this floor in close proximity to the X ray room. There are two *operating theatres*, one of which is fitted for radiographic observations during operations. The theatres are floored with rubber; they can be steamed before operation so as to obtain a sterile atmosphere. These are lighted from above and from the sides and artificially by means of daylight lamps placed above a glass false roof. Hot and cold sterile water and saline solution are laid on by pipes from the sterilising room, and in both rooms, below the operating table, is a rubber-covered trap-door concealing a box in which are to be found two electric light plugs, three electric power plugs, an air pressure tap, and a suction tap. By means of a wind-screen wiper the air pressure and the suction can be made intermittent. By partly raising the trap-door leads from these fittings can be brought directly up to the operating table and thus a head lamp, an electric cautery, intratracheal anæsthesia, and suction swabbing of the wound can be utilised without the inconvenience of leads and other apparatus obstructing the theatre. To obviate the collection of dust on the false glass roofs of the theatre, these are made to slope to either side from a central spar along which is led a water sprinkling pipe, by means of which the glass may be washed from above by merely turning a tap. The sterilising room is fitted after the usual hospital pattern with high pressure steam autoclaves, instrument and basin sterilisers, and hot and cold water and saline sterilisers. Adjoining the theatre is the anæsthetic room. Off the anæsthetic room open three specially heated recovery rooms for animals after operation. Besides the protected steam pipes which pass through these rooms, plugs are provided for the supply of electric mats for cases in which the supply of warmth is of special importance. A small post-mortem room completes the operating department, which is floored throughout with rubber and can be flushed with water in its entirety. A biochemical room is equipped for chemical investigation in relation to experimental work and will have a close liaison with the corresponding clinical laboratory in the hospital. A small room, which can be steamed to provide a sterile atmosphere for inoculating culture media and for post-mortem examinations in which bacterial contamination must be rigidly excluded, is found at the entrance to the experimental floor. Adjoining the professor's room on the experimental floor is the dictaphone and stenographer's room, where records of experiments can be made without delay.

*Animal Houses.*—Direct access from the experimental floor is obtained by means of a covered bridge and gangway to the newly constructed animal houses and to the elevator leading to the teaching department. In order to meet the greatly increased demands for experimental animals the animal houses, formerly a collection of one-storey buildings, have been doubled in size by building a second storey. Central heating is provided throughout, the walls are of glazed Keen's cement and can be easily flushed down. The windows and roof lights are of Vita glass to permit of the passage of ultra-violet rays, and next the operating department is a bathroom, fitted for washing animals before operation.

# A VISIT TO SOME OF THE WEST GERMAN SPAS.

OPPORTUNITIES were recently given to representatives of the *British Medical Journal* and THE LANCET to make an official tour of spas in Western Germany, of which little has been heard in this country since 1914. Ten spas were visited, and the brief notes which follow are given in the order in which the visits were paid.

## NEUENAHR.

This little spa is situated in the valley of the river Ahr, a few miles from the point where it joins the left bank of the Rhine, and is reached by train from Cologne in about two and a half hours. It is a well-wooded, sheltered place with clean, smooth gravel paths and roads which make walking possible immediately rain ceases. The Kurhotel, with its 350 rooms, said to be the largest hotel in West Germany, is modern and comfortable, and its kitchens are models of cleanliness and efficiency. Facing the Kurhotel, and separated from it by lawns and gravel paths, stands the Kurhaus (i.e., Casino) with its band-stand, concert-room, theatre, café, dancing hall, and American bar. Here the young and the holiday makers can amuse themselves without disturbing those who are taking the cure. Behind the Kurhaus, and separating the spa grounds from the small town, runs the little river Ahr, which has the appearance of a good fishing water and is said to be well stocked with trout. The spa grounds contain the warm, ferruginous, highly carbonated springs, the discovery of which led to the development of this place some 70 years ago. The bath establishment adjoining the Kurhaus contains 120 bathrooms, mostly constructed for giving only simple immersion baths in the thermal water; there are also rooms for massage, packs, and various electrical treatments, but it is evident that these accessory treatments are of secondary importance.

Neuenahr specialises in the treatment of diabetes and obesity and of sufferers from gastric and duodenal ulcer. Here more attention is given to diet than in most German spas, and in the Kurhotel all menus are divided into three parts; the first the ordinary menu, the second for those with digestive troubles, and the third for the diabetic and obese. The essential features in the diabetic diet are the provision of special breads, biscuits, and puddings with low carbohydrate content but still quite palatable, and the substitution of saccharine for sugar in cooking. The use of the waters is empirical and there is no up-to-date laboratory for clinical investigations. Urinary sugar is estimated, but blood sugars are estimated only in the presence of acetonuria, and, as coma is said to be almost unknown during treatment, it must be assumed that severe cases of diabetes form a small minority of the cases sent here. But with the water drinking and bathing, diet, and graduated exercise it is said that good results are obtained.

The place has an attractive simplicity and shows what can be done in the development of a small spa without lavish expenditure, provided that the local waters and surroundings are suitable.

## EMS.

Ems lies in a deep, rather narrow valley, the configuration of which is reminiscent of Matlock Bath. In the bottom of the valley runs the river Lahn, which is big enough for rowing and sailing regattas to be held here. The town is about equally divided by the river, which is conveniently bridged. Some of the warm springs contain 2 g. of sodium bicarbonate and 1 g. of sodium chloride per litre, this quantity of water yielding from 500 to 600 c.cm. of free carbonic acid gas. The hydrotherapeutic and electrical equipment are modern, and there is a clinic with a State doctor in charge of biochemical and bacteriological laboratories and of the X ray outfit and electrocardiograph. Whilst it is claimed that all catarrhal conditions from eye to bladder benefit by Ems treatment, it is best known for the treatment of bronchitis, asthma, emphysema, and their secondary cardiac disturbances. The pneumatic compression chambers, inhalation, gargling, and spraying rooms are well constructed and provide accommodation for large numbers of patients.

## LANGENSCHWALBACH.

Langenschwalbach may be reached from Ems by car through the forests covering the Taunus mountains. On the hillside are the large barracks built for the French Army of Occupation, which have recently been taken over by the British. The iron drinking waters are used in the treatment of anæmia and dyspepsia. Carbonated chalybeate waters are also used for immersion baths, but best known of all are the chalybeate mud baths, of which some 6000 a year are given for inflammatory conditions of the pelvis, rheumatism, and chronic fibrositic conditions. The rather deserted appearance of this little spa in the hills is probably due in part to a fall in the pre-war number of 6000 visitors per annum to about 2000 at the present time, but it has an attractive and restful look.

## SCHLANGENBAD.

This is a pretty hillside health resort among the woods where the wells are carbonated water of low mineral content. The "steam bath," in which the water flows continuously through the bath, has been found useful for skin diseases; Schlangenbad is a suitable place for rest cures and here come people suffering from insomnia, neurasthenia, and nervous breakdown.

## WIESBADEN.

Wiesbaden lies at the foot of the Taunus Mountains and is a handsome, modern city with beautiful surrounding woodlands. The splendour of the Kurhaus and of the Kaiser Friedrich Bad, completed in 1914 regardless of expense, is somewhat overwhelming. Sodium chloride is the chief mineral constituent of the hot springs, and gout and rheumatism are the complaints for which these waters seem most suitable, but the equipment of the bathing establishments is so complete that practically all diseases amenable to spa treatment can be dealt with. At the general hospital, of which Dr. Geronne is in charge, there is also a well-equipped balneotherapeutic department. One half of this hospital is at present occupied by the R.A.M.C. as the central hospital for British troops in occupied territory. Several of the private hotels, such as the "Four Seasons," have their own thermal springs and bath houses, so that patients can take their immersion baths with the minimum amount of trouble.

### KISSINGEN.

There is an old-fashioned stateliness about Kissingen and a quiet dignity even in its newest spa buildings which is very restful and in pleasing contrast to the more ornate decoration seen elsewhere. The balneological plant is modern, and experimental work in the collection, analysis, storage, heating, and manipulation of the highly carbonated saline waters is carried out by an able chemist, who is the State mineral water engineer for this and other Bavarian spas. Dr Granville's letters to the *Times* in 1850, describing the wonders of the newly discovered great artesian salt spring issuing at a temperature of 66° F., may in part account for the large number of English visitors of former times. The cold saline water contains an exceptionally large quantity of free carbonic acid gas. Chalybeate waters and mud baths are used, and the complaints mainly treated are diseases of the digestive system, arterio-sclerosis, gout, and rheumatism.

### NAUHEIM.

Nauheim was well known to English people in pre-war days. The free supply of carbonated saline chalybeate waters issuing at a temperature suitable for bathing without artificial heating or cooling, and in various strengths of saline content and free carbonic acid gas, explains in part why the spa became known as a health resort for people suffering from circulatory disturbances. The mineral water engineering here is particularly interesting. Carbonated saline waters are common in Germany, and other spas claim to give treatment for disorders of the heart as well as Nauheim. The arguments current there as to the absorption or the reverse of carbon dioxide through the skin, as to the different action of artificial and natural $CO_2$, and as to the importance of the proportions of sodium and calcium salts to one another and to other salts are entertaining if not convincing. In Nauheim, however, the dogmatist of the combined auscultation-percussion method, with his gradually diminishing blue-pencilled outlines of the heart, is somewhat curbed by the orthodiagram, electrocardiogram, and galvanometer. The State clinic, where these controls are employed, is under the direction of Prof. Weber, who has further research in view. At one private clinic, run on "Duff House" lines, both investigation and treatment are on up-to-date lines. All forms of heart disease are treated in Nauheim, but renal calculus, chronic Bright's disease, and recent cerebral hæmorrhage are regarded as *contra-indications.* Whilst the modern spa physician does not claim to reduce the size of the old hypertrophied heart, he does claim to improve functional efficiency in suitable cases.

### WILDUNGEN.

This small spa lies in a little valley surrounded by leagues of hill and forest. There are several springs, the principal one being a carbonated iron water containing little sodium chloride. A large business is done in bottling and exporting the waters which are best known for their action in diseases of the urinary system. Contracted granular kidney, stone, enlarged prostate, cystitis, and the like are treated here, but the large white kidney with marked albuminuria is not considered suitable for these waters. The baths are built in the ground floor of the large Furstliches Badehotel, where are Turkish baths, douche, and inhalation rooms, although the water, drinking and bathing, are considered the most important parts of the treatment. Ten kilometres away in the River Eder there is excellent trout fishing, at all events for the provident angler who has brought the necessary tackle with him.

### PYRMONT.

Pyrmont is renowned for its mud baths, of which some 300 are given daily, in addition to about 1500 mineral water baths in the full season. They have a high reputation in the treatment of sterility in the female, and it is the custom for young brides from the surrounding country to come here for a course of baths if pregnancy does not result within a reasonable time after marriage. The baths are also used for post-operative and other inflammatory conditions of the abdomen and pelvis. The six chalybeate springs have varying quantities of iron and saline, and one used solely for bathing has a large quantity of carbonic acid. There are also radio-active brine springs besides the enormous quantities of mud, which in this neighbourhood contain sulphuric acid and ammonia. The gardens of Pyrmont are a notable feature, and the presence of palms and other subtropical trees indicates a mild climate.

### OEYNHAUSEN.

This has been termed "the town without steps." The district is flat, and for the convenience of patients taking the cure, and especially those in bath chairs, little slopes take the place of steps wherever possible. The carbonated saline waters come from a depth of 700 metres and the free gas in consequence comes off more slowly than from most other springs. One litre of water yields 900 c.cm. of carbon dioxide. A new spring with a high calcium chloride content is now being bored and is expected to be of value in the treatment of heart diseases. *There are also* saline baths without carbon dioxide. Diseases of the central nervous system, gout, rheumatism, and circulatory disturbances are all treated here. The newcomer is at once struck by the large number of patients in bath chairs. This is not entirely accounted for by the numbers of paralysed and lame people who come here for treatment, but because the local doctors favour this form of "carriage exercise" as a means of ensuring the requisite number of hours rest for those taking the cure. The town is surrounded by a lovely park with well-kept paths and seats at convenient intervals.

## PARIS.

(FROM OUR OWN CORRESPONDENTS.)

### *The Witness of Psychopaths.*

AT the recent Congress of Legal Medicine Dr. Roques de Fursac, medical officer to the Mental Hospital of Ville-Evrard, read an interesting report on the witness of psychopaths, considered both from the point of view of truthfulness and of knowledge; the former being determined by the ratio of exact declarations to the sum of exact and false ones, the latter by the ratio *of exact declarations* to the total questions asked. Generally speaking, the witness of psychopaths is inferior to that of the sane, but a certain number are found whose coefficient of truth is equal or superior to the lowest coefficient in sane persons. The witness of the psychopath cannot, therefore, a priori be turned down. Provisionally psychopathic states can be graded in regard to fidelity of witness in the following diminishing order: melancholia, chronic delusional psychoses, chronic hallucinatory psychoses, mania, cerebral traumatism, schizophrenia, mental retardation, epilepsy, general paralysis, senile dementia, and cerebral arterio-sclerosis. The extent of knowledge shown by the *psychopath is generally* very slight, much slighter than its truthfulness. It is manifested in the small number of questions answered rather than in the number of errors committed. Knowledge is generally good for spacial relations and for acts, bad for personal description, colours, words, localisations in time and duration. Psychopaths are very unequally suggestible. From the point of view of suggestibility the author classes the states in descending series as follows: mental retardation, epilepsy, general paralysis, senile dementia and cerebral arterio-sclerosis, schizophrenia, mania. In melancholia and in chronic hallucinatory psychoses patients are completely refractory to suggestion. The value of a psychopath's witness is always a question of degree and can only be fixed by an expert in credibility.

### *A Service of Functional Recuperation at the Salpêtrière.*

Prof. Guillain has communicated to the Academy of Medicine the results obtained at the Neurological Clinic of the Salpêtrière in a service organised there for two years past by Dr. Gabriel Bidou. His method of functional recuperation has nothing in common with the orthopædic method. It implies collaboration of the neurologist with a physiologist who is both something of an engineer and a mechanician. The apparatus required is the result of special mechanical study based on physiological principles and the general laws of mechanics. Knowledge of pulleys, levers, points of rupture and angles of flexion are, for example, all required to put a paralytic on his feet and to give him the means of locomotion. Thus conceived and realised this ensemble of mechanical factors designed for restoring human function constitutes a veritable treatment which adds substantially to the resources of neurological therapeutics. Old paralytics, completely helpless for years, who might have remained all their life at the Salpêtrière have been enabled to leave the hospital and take up some occupation, and in this way the charges on the Assistance Publique have already been substantially lightened. From the medical point of view there is a humanitarian rôle to fill in restoring to family life patients previously condemned to institutional existence.

### *Sunday Closure of Pharmacies.*

The Pharmacists' Union has received Governmental support in requiring pharmacists to close on Sundays and public holidays, one pharmacy to remain available in each arrondissement. A number of pharmacists who opposed this ruling and kept their shops open have been heavily fined, and the opposition is weakening. One pharmacist bowed to the inevitable but draped his doorway in black with a representation of a tomb and cross-bones, and an ironic epitaph on the injustice of the legal order.

### *Increased Family Premiums.*

Provisions materially increasing the premiums awarded to large families recently became effective. Families counting four children or more, aged less than 13 years each, may receive Fr.360 annually for each child, beginning with the fourth. A family of five children would therefore receive Fr.720, a family of six Fr.1080, and so on. Provisions also extend to widows and widowers. A widow having six children would receive Fr.1800 yearly. The increased premiums are actuated by the desire to encourage repopulation.

Dr. Edmund Landolt, well known for his work on refraction and other branches of ophthalmology, has just died at the age of 79. Born in Switzerland, he became naturalised as a French citizen. His two sons served with the French in the world war. He was occupied with studies on refraction to the very moment of his passing.

A convention, ratified by the Government, will lead shortly to the union of the Institut de Cancer with the Faculté de Médecine of the University of Paris. This move toward centralisation is likely to promote greater efficiency in the measures directed against cancer.

The twenty-sixth French Congress on Urology will open on Oct. 5th under the presidency of Prof. Marion. The chief subject for debate is the Vesico-ureteral Reflex. Information from Mr. O. Pasteau, 13, Avenue de Villars, Paris, 7e.

At the International Dairy Congress being held in association with the *foire de Paris*, or annual Paris fair, it was suggested that milk should be classed according to its food value in terms of fat content and according to the purposes to which the milk is to be put, the price being graded accordingly.

Prof. Sébileau, chief of the oto-rhino-laryngological service of the Lariboisière Hospital, has been presented by his friends, colleagues, and students with a fine bronze medal.

Prof. Prenant's courses in histology, suspended on account of students' demonstrations, have been resumed without further incident.

The municipal institute of electro-radiology in the Boulevard St. Marcel, Paris, planned 12 years ago, progress being interrupted by the war, was inaugurated on May 21st.

A Bill proposing to make tuberculosis notifiable has been sent by the Chamber of Deputies to the Committee on Hygiene for examination.

The centenary of Laënnec's death was at Montfort-l'Amaury celebrated on June 6th. His effigy is to appear on the postage stamps of the antituberculosis crusade.

## BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

### *Unsatisfactory Results with the Dick Test.*

Dr. Jenö Kramár has made extensive experiments in the University Pediatric Clinic in Pécs in the application of the Dick test. His experiences do not seem to corroborate the views of the American authors, who have published enthusiastic reports on the reliability of this test. Dr. Kramár says that those children who were alleged to have suffered from scarlet fever gave positive reactions in practically the same percentage (60 per cent.) as did those who had no history of the infection (58 per cent.). These results could hardly be explained on the basis that the history given might not be reliable. Dr. Kramár found also that serial tests made on the same subject gave different results: the child who gave a negative reaction in the first instance later became positive, and afterwards repeatedly negative. The question arises: Are we justified in regarding a child as immune to scarlet fever because of the negative result of a single test? His experimental results suggest that the reaction in scarlet fever patients does not follow such a strict rule as American authors would have us believe. One-third of the observed scarlet fever patients gave a strongly positive reaction, even in late convalescence; on the other hand, the reaction was negative in other cases even at the outset of the disease on the second and third day. On these grounds Dr. Kramár doubts whether the Dick test could be advantageously used in establishing the diagnosis of scarlet fever.

### *Diseases Acquired by Hospital Workers.*

Prof. Dr. Gerlóczy, managing director of the St. Ladislaus Hospital for Infectious Diseases, and lecturer to the Budapest University, publishes interesting and instructive data in the last number of *Egészség (Health)*. According to the statistical data of St. Ladislaus Hospital during the period 1917 to 1925, out of 176 physicians rendering service as junior, assistant, and senior physicians, 104—that is, 59 per cent.—contracted some infectious disease. Among these there were 33 cases of tonsillitis, 32 influenza (with one fatal case), 5 scarlet fever, 3 typhoid fever, 3 angina, 12 cases of dysentery, 4 epidemic conjunctivitis, 2 nephritis, 2 cellulitis, 2 pleuritis, and 1 diphtheria, 1 erysipelas, and 1 epidemic enteritis. Among the clerks of the hospital 12 contracted diseases and 4 of them died. Among the nurses, 630 contracted infectious diseases, and of these 30 died. Out of the auxiliary staff (servants, laundry women, cooks, &c.), 78 fell ill, with 9 fatalities. The statistics relating to the latter two categories nurses and auxiliary staff, cover the period between 1910 and 1925, while those relating to the clerks cover the period commencing with 1918

### *Lottery in Aid of Aged and Incapacitated Physicians.*

The Ministry of Finance has licensed the Association *for the Assistance of Incapacitated and Aged Physicians* to issue lottery tickets, any profits accruing being allotted to the help of the beneficiaries of the Association All administrative work will be done by volunteers. Though the Association only called for medical volunteers to offer their services many lay people of all ranks and classes have volunteered to show their sympathy with indigent doctors 30,000 lottery notes will be issued at about 6*d* each, and the management hopes to make a net profit of about a thousand pounds. As the sale of the tickets is likely to be pushed by all doctors, and particularly by those living in the country, it is hoped that the enterprise will be a success.

### *The Spread of Goitre in Hungary*

The Ministry of Public Welfare has compiled statistics on the spread of goitre in Hungary According to the data published the number of adult goitre patients has not increased On the other hand, there is a very large increase in goitre among school children, particularly among girls The percentage of the occurrence of goitre among school children is 2 38; that is very low in comparison with certain other lands, as, for instance, Switzerland, where 60 80 per cent. of school children suffer from goitre, or Austria, where the figure is 25–40 per cent. The institutions established by the Ministry of Welfare for the checking of even this small number of goitre cases appear, judging by the statistics, to be doing good work.

### *The Mortality rate of Budapest*

In the second half of last year the mortality rate of Budapest was exceedingly great. In fact, the only capital in Europe which exceeded the Budapest rate is Warsaw The Hungarian Ministry of Health is greatly concerned about this state of affairs, though the rate is a considerable improvement on that for the corresponding half of 1924 The mortality rate per 1000 was 17 in Lithuania for the year 1924 and fell to 14·2 in 1925 Since in all other European capitals excepting Oslo the rate of mortality appears to be on the increase, the fact that some improvement is taking place is encouraging

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 29TH, 1926

*Notifications*—The following cases of infectious disease were notified during the week: Small pox, 103 (last week 162); scarlet fever 1088; diphtheria 379; enteric fever, 80; pneumonia, 990; puerperal fever 45, cerebro spinal fever 7; acute poliomyelitis, 3; encephalitis lethargica, 42; trench fever 1; dysentery, 4; ophthalmia neonatorum, 90 There was no case of cholera, plague, or typhus fever notified during the week.

In London itself there was notified no case of small pox; scarlet fever 250 diphtheria 234; enteric fever, 9; pneumonia 96 puerperal fever, 6; cerebro-spinal fever 1; acute poliomyelitis 1; encephalitis lethargica, 4; and ophthalmia neonatorum 9

*Deaths.*—In the aggregate of great towns including London there were 1 (1) death from enteric fever, 36 (12) from measles, 6 (2) from scarlet fever, 25 (3) from whooping-cough, 10 (2) from diphtheria 15 (8) from diarrhoea and enteritis under 2 years and 78 (15) from influenza. The figures in parentheses are those for London itself

(The Registrar General's weekly return had not appeared as we went to press and we are indebted to the Ministry of Health for these figures.)

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THE Minister of Health, Mr Neville Chamberlain, will distribute prizes at the *London Hospital Medical College* and Dental School on Monday, June 28th at 3 P.M Academic dress will be worn at the distribution which takes place in the College Library, and there will be tea and music in the garden

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Surg Comdr W T Haydon is placed on Retd. List with the rank of Surg Capt.

Surg Lts W H Bradfield to the *Hermes*, J C Souter to the *Emperor of India* J W Tighe to the *Herald*, J Mitchell and J C O Boyle to the *Defiance*, temp., and A. E. Phillips to the *Dolphin*, for special duties and to the *President* addl., for R.N College, Greenwich, for course of instruction at Medical School.

### ROYAL NAVAL VOLUNTEER RESERVE.

Proby Surg Lt. (D) E. D Collins to be Surg Lt. (D)

## ROYAL ARMY MEDICAL CORPS

Maj Gen Sir M. H G Fell, late R.A.M.C, to be Deputy Director-General at the War Office, vice Maj Gen. C E. Pollock, K.H S., who retires on retd pay

Maj and Bt Lt-Col. S. L. Pallant to be Lt.-Col., vice Lt-Col C W Holden to ret. pay

Capt. A. G P Hardwick retires, receiving a gratuity

### SUPPLEMENTARY RESERVE OF OFFICERS

Lt. A. R. Balmain to be Capt.

### MILITIA

Capts. G Perkins and I. D Evans to be Majs.

### TERRITORIAL ARMY

Lt G A MacDonald (late R.G.A., Spec Res) to be Lt.

Lt. E. H Ponder resigns his commn.

R. W Power to be Lt.

A. L. Moorby (late Temp Lt., R.A.M.C) to be Lt

Maj-Gen. R. S. Hannay, C M G, D.S O, late R.A.M.C, has been appointed Hon. Surg. to the King, vice Maj Gen. H. A. Hinge, C B, C M.G, D S.O, late R.A.M C., retd.

## INDIAN MEDICAL SERVICES.

Dr G. W Bamford is appointed Resident Assistant Surgeon, Government Headquarters Hospital, and Lecturer in Materia Medica, Medical School, Tanjore, vice Dr A. P. Kuriyappam. Major P B. Bharucha, Professor of Anatomy, is appointed Professor of Operative Surgery, King Edward Medical College Lahore, vice Captain S N Hayes transferred. Dr Said Uz Zafar Khan, Principal, King George's Medical College, Lucknow, has been appointed a Member of the Board of Public Health, United Provinces vice Major H Stott, O B.E., resigned Captain H C. Tait, from Quetta, has been appointed Officer Commanding, Indian Station Hospital at Nasirabad, vice Major H de S B Herrick. Major H. Illingston acts as Professor of Medicine, Calcutta Medical College, during the absence on leave of Lieut.-Colonel F A. F Barnardo Major E. H. V Hodge Surgeon to the Governor of Bengal, acts as Professor of Clinical Medicine, Calcutta Medical College. Lieut-Colonel A. H Proctor, Civil Surgeon, Darjeeling, acts as Surgeon to the Governor of Bengal. Dr B. R. Brahmachari, officiating Director of Bengal Public Health Laboratory, acts as Professor of Hygiene in the Calcutta School of Tropical Medicine vice Lieut.-Colonel E B Fry Major A A C. McNeill officiates as Deputy Assistant Director of Medical Services (Mobilisation) Rawalpindi District vice Major A Kennedy Captain P H. S. Smith officiates as Deputy Assistant Director of Medical Services (Embarkation) at Bombay, vice Major C T V Benson Captains J Dunlop and R A. Murphy, Auxiliary Force Medical Corps have been awarded the Indian Volunteer Long Service Medal.

The following have been granted leave: Major D Sandes, Professor of Clinical Medicine, Medical College, Calcutta, Lieut. Colonel E. Waters, Surgeon Superintendent, Presidency General Hospital, Calcutta; Dr R S. Keelan, Deputy Superintendent, Mental Hospital, Agra, and Dr S. H Commissariat, Superintendent, Medical Aid for Women, United Provinces.

## TERRITORIAL ARMY AMBULANCE CHALLENGE SHIELD

The annual competition for the Territorial Army Ambulance Challenge Shield will take place at the Duke of York's Headquarters Chelsea, on Saturday June 26th, at 2 P.M. The competition is open to squads of Territorial Army medical units and of recognised stretcher bearers borne on the establishment of other units of the Territorial Army

# Correspondence.

" Audi alteram partem."

## THYROID ENLARGEMENT AND THE "LACK OF IODINE" THEORY.

*To the Editor of* THE LANCET.

SIR,—The following facts concerning the incidence of thyroid enlargement among the school-children of Hull, and the absence of iodine from the drinking-water of the city, strongly support the thesis of Sir James Berry in his Hunterian Lecture, published in your issue of Feb. 6th last, that lack of iodine is not the cause of endemic goitre.

In March, 1924, Sir George Newman issued a request to school medical officers that all cases of thyroid enlargement among school-children of the age of 12 years should be recorded, defining the condition by stating that only cases in which the enlargement was visible should be counted, and that measurements need not be taken. From the date of the letter until the end of that year 4103 children of the required age were examined in Hull; and only 14 (0·34 per cent.) showed any enlargement, the percentages for the sexes separately being: boys 0·26, girls 0·43. Among the records of other towns may be noticed Liverpool (situated like Hull on an estuary), the percentages here being: boys 0·33, girls 1·38; among inland towns, Leicester: boys 0·81, girls 2·51; Sheffield: boys 1·0, girls 4·4; while in Bristol the percentages were: boys 4·44 and girls 9·78.

As regard Hull, before any children had been examined, steps were taken by one of us (A. R. T.) to ascertain the proportion of iodine in the city supply water. Numerous methods have been proposed for the determination of minute amounts of the halogens (especially bromine and iodine) in natural waters, but the process of Fresenius is commonly followed.

In this method, a considerable volume of the water (20 litres or more) is evaporated to low bulk, after making distinctly alkaline with sodium carbonate, when the insoluble salts are removed by filtration and washing, leaving a filtrate containing all the soluble halogen salts. This filtrate is again concentrated and poured into three volumes of alcohol of 96 per cent. (weight) strength. Sodium chloride and other undesired salts largely separate out, leaving the bromine- and iodine-containing salts in solution. After standing overnight, the solution is filtered, the alcohol distilled off after making the liquid alkaline with a little caustic potash solution, and the residue diluted with water. 20 c.cm. of carbon disulphide (or chloroform), sufficient dilute sulphuric acid, and 10 drops of a saturated solution of nitrous acid gas in sulphuric acid, are now added, and the mixture well shaken. After the addition of more nitrous acid to ensure liberation of all the iodine present, the carbon disulphide is separated and the aqueous solution extracted twice more with further quantities of carbon disulphide. The mixed carbon disulphide solutions are washed with water till free from acid, and then titrated, after adding sodium bicarbonate solution in excess, with standard thiosulphate solution till the solvent has become colourless.[1] Bromides remain in the aqueous solution. A modification of the above process, stated to be so delicate as to detect quantities of iodine so small as those of the order of $3 \times 10^{-7}$ g., consists in the extraction of the acidified salts of the water, treated as before with sulphuric and nitrous acids, with carbon disulphide or chloroform, finally concentrating the solvent by careful evaporation at a low temperature to about 0·02 c.cm., and determining the strength of the colour left in the drop of solvent. For success with these methods it is essential that large volumes of the water be operated on.

No detectable trace of iodine was obtainable from the deep well chalk water supplied to the city of Hull by working in this way; indeed, it would appear that natural deep well waters from the chalk do not contain any appreciable proportion of bromine or iodine compounds. The last named are generally found in highly saline waters containing much sodium chloride and other chlorides; deep well chalk waters contain only very small amounts of chlorides and other salts, except calcium bicarbonate. There is thus no reason to connect the low incidence in Hull of enlargement of the thyroid gland with any action of iodine contained in the drinking-water. The Hull city supply of water is of great organic purity, crystal clear, and needs no filtration nor other treatment before distribution through the mains. Its hardness is: permanent, 6·5 to 7·5; and temporary, 14·0 to 17·0 parts per 100,000, as determined by the soap test and expressed as $CaCO_3$. It is therefore further evident that excess of dissolved calcium carbonate can scarcely be the effective cause of endemic goitre, though water derived from limestone has been suspected to be so. According to Colonel R. McCarrison, it is the presence of undissolved (suspended) matters in drinking-water that is the cause of this disease, and he quotes an instance of a school in which many cases occurred when the water was drawn from a contaminated source; when an unpolluted supply was obtained no new cases appeared.

The suggestion that sea breezes may carry enough iodine to supply the deficiency in the drinking-water might apply to Hull or Liverpool, but it is negatived by the figures from Bristol. If the lack of iodine theory is disproved, it renders unnecessary the addition of iodine to the drinking-water; persons affected by the disease can then be medicinally treated, the risk of causing hyperthyroidism in susceptible persons will not be incurred, and the considerable expense of treating large quantities of water will be saved.

We are, Sir, yours faithfully,
JAMES W. FRASER, M.D., C.M., M.R.C.S.,
School Medical Officer, Hull.
ARNOLD ROWSBY TANKARD, F.I.C.,
May 31st, 1926. City Analyst, Hull.

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## CHOLECYSTOGASTROSTOMY FOR GASTRIC ULCER.

*To the Editor of* THE LANCET.

SIR,—Mr. Braithwaite's suggestion to replace gastro-enterostomy by cholecystogastrostomy in the treatment of gastric ulcer seems to me open to the objection that stomach contents can flow as easily into the gall-bladder as bile into the stomach. He based his operation on the success of the technique of cholecystogastrostomy performed for obstructive jaundice due to pancreatic disease (cancer or fibrosis of head); but here we have a more or less constant positive pressure in the gall-bladder. I would like to suggest to him that a more suitable operation would be on the lines of Roux's gastro-enterostomy, inplanting the distal end of the cut jejunum into the stomach as Roux did, but using the proximal cut end to implant into the stomach as near the ulcer as possible; this would ensure *all* the alkaline digestive juices being sprayed on the ulcer which I believe he mentioned in his article as being possibly desirable. (The pylorus, of course, would be closed.)

That the present gastro-enterostomy operation is not the last word in technique or treatment I quite agree. I have always, until the last one I did, performed it on the lines of Sherren's technique no loop-posterior-vertical. While most of them have done perfectly and have remained well, I nearly lost one and my senior surgeon did lose another from persistent vomiting. My case was saved by entero-enterostomy between the efferent and afferent limbs of the jejunal loop; the other case did not survive the second operation. In both cases the stomach and afferent limbs were distended, discoloured, and boggy. Personally, I think there is much too small a margin of safety in the technique and that obstruction easily occurs from kinking. I believe the so-called paralytic vomiting is always obstructive and that in the cases where this is overcome by lavage, &c., the stomach and jejunum eventually settle down into a position where the *efferent* limb is unkinked and the stomach is able to pass its contents into the efferent limb.

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[1] See Sutton's Volumetric Analysis, eleventh edition, 1924, p. 235; and Treadwell and Hall, Analytical Chemistry, vol. ii., p. 521, for further details.

In the future I am fully determined to do only Roux's operation. It takes longer, but is as far as I can see an absolutely safe kink-proof operation and the one I have done had perfect immediate and after results. While on the subject of gastric ulcer I would like to mention the treatment of perforated gastric ulcer. There seems to be a tendency now to treat perforation by suture and immediate gastro-enterostomy. I cannot believe this to be anything but a pernicious doctrine. First, gastro-enterostomy is a big strain to put on a severely shocked patient and in the most competent and rapid hands will entail an addition of round about 20 minutes to the operation; and, secondly, the end-results of several years of experience as a general practitioner-surgeon do not seem to justify any addition to the technique of burying the ulcer by purse-string suture.

On points like this the G.P.-surgeon may safely say a word. If he cannot quote hundreds of cases yet he has to live with his patients afterwards, and I can definitely say that as long as the perforation can be closed and the ulcer turned in without practically closing the pylorus, the end-results lasting in many cases for years, 15 at least, have been excellent. I have only once had to do a secondary gastro-enterostomy after an operation for perforated gastric ulcer, and my experience is that involution cures the ulcer and the stomach rapidly accommodates itself to the deformity produced by this operation. In the case mentioned suturing produced so much pyloric narrowing that I had to do a gastro-enterostomy a fortnight later.

I am, Sir, yours faithfully,
R. LEONARD LEY,
Assistant Surgeon, Great Yarmouth Hospital.
May 31st, 1926.

## THE TREATMENT OF SCIATICA

*To the Editor of* THE LANCET.

SIR,—Dr. J. P. Martin in his article in your issue of May 22nd on the treatment of sciatica does not include the local application of ultra-violet rays as one of the methods of treatment for this condition. The method is extremely simple, simpler than any of the methods mentioned, and is free from any danger of burns or shocks. The most convenient lamp for the purpose is the Kromayer (water-cooled mercury vapour) which is applied in contact with the skin. The applications are made over the nerve roots and along the course of the sciatic, giving one–two minutes (a third degree erythema, depending on the age of the lamp), particularly to points which are tender to pressure. Ten such points or more may be treated at one sitting, and others on succeeding days. Compared to galvanism, ionisation, or diathermy, it is much simpler, easier, and more rapid in its effects. One exposure to half-a-dozen areas has in some cases given considerable relief. This method has been used in chronic cases which have been treated by the older methods (including nerve stretching) without benefit for years, with striking results.

I confess it is difficult to find an explanation for the effect of ultra-violet treatment in these cases. It is extremely unlikely that any of the rays penetrate to the sciatic nerve, so any direct action must be excluded. Prof. Dixon has pointed out the similarity between ultra-violet rays and the mustard leaf in the effects on the skin (*Brit. Med. Jour.*, Sept. 19th, 1925). Counter-irritation alone, however, will not explain the results, for some of the cases still bore pigmented areas on their thighs as evidence of previous counter-irritants, which they stated had not given relief. Neither will a functional element serve as adequate explanation in the particular type of cases (pensioners) dealt with. The local analgesic action of ultra-violet rays will not explain the effect in chronic cases where the pain is probably due to adhesions and pressure on nerve-fibres within the sheath.

However, even though no adequate explanation can be given, we are no worse off theoretically than with most of the other methods, for there is no adequate explanation why ionisation, galvanism, or oxygen should give relief. The following are types of case which have been treated with benefit:—

CASE 1.—Admitted for treatment for bronchitis and asthma, but for the last two years had been complaining of a left-sided sciatica. In 1924 he was treated at an infirmary for seven weeks without benefit. He was at home in bed for four months and then treated at another hospital for several months. On admission here in November, 1925, he was walking with a crutch. He was complaining of pain across the loins and could not put his heel to the ground, owing to the pain it caused in the whole limb. Within a week he discarded his crutch, walking with the aid of a stick only, and he soon discarded that too. He was in the hospital for treatment for his bronchitis and asthma for two months. During this period the treatment for sciatica was continued, both local and general ultra-violet baths being given. By the end of the two months he had made up a half inch wasting of the thigh and his sciatica had disappeared.

CASE 2.—Contracted sciatica 1913. He had attacks at intervals till 1920, and since then he has been treated with radiant heat, massage, and electrical methods at one hospital or another every year. He was discharged from one hospital in March, 1925, but was readmitted to another in August. For two months he was on massage, radiant heat, and electrical treatment without benefit. When he came to the "Light" Department in October he was limping along with the help of a stick. He was tender to pressure along the course of the sciatic, and there was half inch wasting of thigh and calf. He also had a marked synovitis of the right knee. Within three weeks he discarded his stick and could walk three miles. Within two months the synovitis had disappeared, and also the wasting of the limb. He had gained 10 lb. weight and was discharged.

Not all cases will respond, but of ten cases, with an average history of seven years, there have only been two failures. One of these was on treatment for a short period, but as he was showing no signs of improvement, the nerve was stretched by the open method with considerable success, a previous manipulation having failed to give him relief. The other case also had the nerve stretched after a period of ultra-violet treatment without benefit. It should be added that all these cases were also given general ultra-violet radiation as a general tonic. I feel, however, that the effect was mainly due to the local treatment, as the symptoms disappeared in some of the cases before the general baths could have had an appreciable effect.

I am, Sir, yours faithfully,
M. WEINBREN.
The Queen's Hospital, Frognal, Sidcup, Kent,
June 2nd, 1926.

## FILIGREE IN HERNIA OPERATIONS.

*To the Editor of* THE LANCET.

SIR,—The article by Mr. Percival P. Cole in THE LANCET of May 22nd must compel attention to the use of the filigree in the operation for the radical cure of inguinal hernia. His figures are so convincing that they cannot be disregarded by those interested in the problems of hernia. They should silence once and for all the unfair criticisms levelled against the method in text-books of surgery and in monographs on hernia—criticisms not infrequently repeated by those who have not given the method a fair trial nor mastered the technique of the operation. Such results should embolden those who are restrained from the use of the filigree because of theoretical objections. Not uncommonly does theory mislead or misdirect us in the practice of surgery. It is regrettable that so simple, so effective, and so successful a method should not be more commonly practised.

The published results of hernia operations with their usual 6 to 8 per cent. recurrence in oblique inguinal hernia and very much larger, one might say appalling, recurrence rate in the direct variety are based on cases selected for operation after numbers have been rejected as unsuitable either *from* the point of view of age, size, type, or duration of hernia. Mr. Cole has drawn his series from the same source as that from which I quote cases below—viz., seamen, of whom none are refused operation. There is no selection. A hernia even controlled by truss prohibits a seaman from going to sea and therefore endangers his livelihood, so that operation cannot be refused. This fact adds immense weight to Mr. Cole's results as they stand, and in comparison with other reported series, and makes the filigree properly used almost indispensable in certain cases.

I find that in the last three years at the Seamen's Hospital—and I only quote these cases, although I have used the filigree elsewhere, and in my private work—that I have operated on 121 cases of hernia and in 28 have used filigrees. The filigrees were employed in recurrent inguinal hernia, direct inguinal hernia, and large oblique inguinal hernia of long standing in aged persons with but scanty musculature —cases, indeed, in which one has learnt by experience that high ligation of the sac alone or in combination with some form of plastic suturing would be insufficient. It is only natural that seamen would return to their hospital, which has a world-wide reputation amongst them for the treatment of hernia, if trouble followed the use of the filigree or if there were recurrence. In the last five years there has not been a single return for removal of the filigree for any cause, or for recurrence in a case where filigrees have been used.

I am, Sir, yours faithfully,

London, W., June 1st, 1926. E. T. C. MILLIGAN.

## LISTERISM IN MIDWIFERY.

*To the Editor of* THE LANCET.

SIR,—To the obituary notice of Sir John Williams in your last issue I should like just to add that he and I set up Listerian antiseptic midwifery at the General Lying-in Hospital in 1880—the first lying-in hospital in England to adopt Listerism. This is a piece of history which should not be lost.

I am, Sir, yours faithfully,

Uckfield, Sussex, June 4th, 1926. F. H. CHAMPNEYS.

## AUTOLYTIC PRODUCTS AND MALIGNANT TUMOURS.

*To the Editor of* THE LANCET.

SIR,—In Dr. Gye's communication to the Surgical Section of the Royal Society of Medicine, reported in your last issue, and also in his original paper on the origin of tumours, he fails to call attention to a fact which has been known for many years—viz., that the autolytic products of tumour tissue contain substances which are stimulating to the growth of tumour cells. These substances are certainly chemical bodies and not living agents, they act in high dilution, and they are in all probability end-cleavage products of enzyme action. We have reason to suppose that they are present in other tissues than malignant tumours, such as embryo tissue, mammary tissue, and placenta, in fact in all tissues rich in nuclear structures. Stimulation of growth with embryo tissues was obtained as long ago as 1910 by Haaland and others.

It is evidently of great importance in proving Dr. Gye's argument that the tests he has carried out on his control tubes containing autolysed embryo tissue are completely reliable. Dr. Murphy and he disagree on this point. When two entirely conscientious experimenters differ in the results they obtain with a particular group of experiments it usually means that both are recording true results, and I should hesitate to disbelieve Dr. Murphy's positive findings notwithstanding Dr. Gye's 150 experiments with negative findings. The explanation is, very probably, that some slight but important difference of technique has occurred. In test-tubes containing autolysing tissue the contents of the tubes are constantly changing and are changing in different degrees in different parts of the same tube. I should expect to find growth stimulants at the bottom of the tubes but not necessarily in the upper fluid. If one observer has stirred his tubes and the other has not, different results might easily be obtained. Dr. Gye acknowledges that his Rous virus may not be actually killed in the chloroformed extracts. It seems therefore that he is really studying the factors which can revive an attenuated Rous virus rather than the "origin of tumours."

Dr. Gye has undoubtedly done a great service to research and I do not question the facts he has observed, only the interpretation he has put upon them. To the researcher there is no problem more open to pitfalls or more difficult than the true interpretation of results.

I am, Sir, yours faithfully,

Watford, June 3rd, 1926. HELEN CHAMBERS.

## BIRTH INJURIES TO THE EYE.

*To the Editor of* THE LANCET.

SIR,—In your annotation with this title, published in THE LANCET of June 5th, you say, in referring to the corneal scars left after rupture of the posterior elastic lamina: "These scars are always vertical, or approximately so, a fact probably related to the direction of pressure by the forceps." You will, we feel sure, allow us to mention that this is not a strictly accurate statement. A reference to our article, Obstetric Injuries of the Cornea, in the *Ophthalmoscope* for 1905, and on p. 271, will show that out of ten cases there shown in diagram, the opacity was transverse in one and concentric with the corneal limbus in another. Further, on the supplement page which faces p. 207, there is an actual drawing of the transverse case. It is true that the scars are usually more or less vertical, but we are of opinion that they may occur in almost any direction.

We are, Sir, yours faithfully,

Stirling, June 8th, 1926. ERNEST THOMSON.
Glasgow, June 8th, 1926. LESLIE BUCHANAN.

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**COMPLIMENTARY DINNER TO PROF. FIBIGER.**—The medical staff of the Cancer Hospital (Fulham-road, London) gave a dinner at the Langham Hotel on June 7th to Prof. Johannes Fibiger, of Copenhagen, in recognition of his eminent services to cancer research. The chair was taken by Mr. Ernest Miles, senior surgeon to the hospital, and among those present were Lord Dawson, Sir Humphry Rolleston, Sir John Bland-Sutton, Sir Frederick Andrewes, Sir Walter Fletcher, Profs. Muir, Bulloch, Dreyer, Dean, Ledingham, and Lazarus Barlow, Dr. H. H. Dale, Dr. W. E. Gye, Sir James Dundas-Grant, Mr. Cecil Rowntree, Mr. Percival Cole, Mr. Cecil Joll, Mr. C. E. Shattock, Dr. Stanley Wyard, Dr. H. Robinson, Dr. E. L. Kennaway, Dr. H. J. B. Fry, Dr. J. O. Harvey, Dr. J. E. A. Lynham, Dr. R. Knox, Dr. W. Cramer, Mr. L. A. Harwood, Dr. Archibald Leitch, and Mr. A. L. Abel.

**PROF. G. M. ROBERTSON ON LUNACY CERTIFICATION.** At a lecture given under the auspices of the Edinburgh branch of the British Medical Association on June 1st, Prof. Robertson stated that certification was essentially confidential and personal and that action might easily be taken against a doctor on a patient's release from an asylum or mental hospital, especially as with many patients the recovery was only partial. He urged the necessity of protection by some society. It was usually the second certifying doctor, who did not know the patient so well, who bore the brunt of the action. The provision of the Act was that "reasonable care" should be exercised; if a second visit was paid and careful notes taken, this should satisfy any jury with regard to necessary care. The word "lunatic" being a medico-legal term denoting a person suffering from disease of the mind affecting conduct, a person could not be deprived of liberty unless he was of unsound mind affecting his conduct with regard to the safety of himself or others. The best way out of any difficulty was to persuade the person to enter a mental hospital as a voluntary patient, and this was not so difficult as might be supposed; nowadays, in fact, in the higher paying hospitals, 60 to 80 per cent. entered on this basis, although unfortunately this was not the case to the same extent in parish-controlled hospitals where Government grant was lost unless a patient were certified.

# Obituary.

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## SIR WILLIAM BOOG LEISHMAN, K.C.M.G., C.B., M.B., C.M. Glasg., F.R.C.P. Lond., F.R.S., LL.D.,

DIRECTOR-GENERAL, A.M.S.

Not only the medical profession but the whole scientific world learned with real grief the death last week, after a brief illness, of Sir William Leishman, Director-General of the Army Medical Service for the past three years. He belonged to a select and extraordinarily able band of men who during the first quarter of this century have revolutionised the whole outlook of tropical medicine, and within that band he specially distinguished himself by his large and independent researches, while contributing with untiring and unselfish effort to the general output.

Sir William Leishman.

William Boog Leishman was born in 1805, the son of Dr. William Leishman, professor of midwifery and obstetrics in the University of Glasgow. He was educated at Westminster School, and entered the medical profession as a student at his father's university, where he graduated M.B., C.M. in 1880. He joined the R.A.M.C. the following year, holding his first commission, therefore, at the age of 22. He proceeded on foreign duty in 1800, and first saw active service with the Waziristan expedition in 1801, where he obtained the medal and clasp. By this time he had already begun to take a close interest in bacteriology, especially in relation to the tropical diseases malaria and dysentery, with which he found himself in perpetual contact. On return to England in 1807 he was stationed at Netley, where he did duty in the wards, but spent all his spare time in the excellent laboratories of the Army Medical School under Sir Almroth Wright and Sir David Semple, then respectively professor and assistant professor of pathology. During this period he assisted Wright in the early work on typhoid vaccine and made some investigations into Malta fever, a disease which later he contracted himself in the laboratory. He also took part in the teaching and demonstrating in the classes for surgeons on probation, and did this so well and showed such aptitude that he was appointed assistant professor in 1000 when Semple went to India. We learn from Sir Almroth Wright that on his arrival at Netley it was significant that he seemed not to know his own splendid capacities for research. Wright had launched between the years 1807 and 1000 his great antityphoid work, and was proceeding with researches in vaccine therapy. These were impeded because the bactericidal power of the serum did not give the necessary indications, and Leishman invented the method of testing the phagocytic power in vitro with resulting developments. At that time at Netley leucocytes were being stained by the cumbrous method which goes by the name of Romanovsky, and Leishman introduced his stain, which has now quite superseded its predecessor. Romanovsky had used mixed solutions of methylene-blue and eosin, and Leishman had the inspiration to mix these together to filter off the precipitate and to dissolve it in methyl alcohol, a solvent used by Jenner in making his stain. These things are mentioned to show how well there were combined in Leishman the ability to devise and acquire technique with the large views later to result in great ends.

At Netley, while still associated with Wright, the beginning was made of the discoveries which led to Leishman's early recognition as a pioneer in tropical medicine. He showed Wright some preparations which he had stained and which had been taken from the spleen after a post-mortem on a man who had died of "dum dum fever," as it was then called. The whole field of the microscope was thickly sown with small oval bodies corresponding with nothing that Wright or he had ever seen or read of—what are now known as *leishmania* parasites—and Leishman, who was a most excellent artist, made some drawings and kept the matter in his mind. Later, when the Royal Army Medical School had moved to London, the work being done at what was then the laboratory of the Conjoint Board, Leishman noticed formed elements when looking at specimens derived from animals who had died with the trypanosomes recently discovered by Bruce and found in rats infected with nagana. These put him in mind of the organisms which had completely puzzled both him and Wright, and he worked on the theory that the organisms which he had previously observed were stages in the life-history of a protozoon, a view which was later confirmed in Calcutta by Rogers, who proved that these bodies, when introduced into a suitable medium, are converted into a flagellate resembling the trypanosome, thus substantiating Leishman's original view of the parasite.

That Leishman was not the first to see the parasites is now admitted. Cunningham, in 1885, described peculiar parasitic organisms in "Delhi boil," and considered that the bodies were a form of spore. In 1801 Firth appears to have seen similar bodies, but thought they were sporozoa. After Leishman's discovery, speculations were rife as to the nature of the bodies; Laveran and Mesnil suggested that they were piroplasma, but Ross, like Firth, thought that they were sporozoa, and afforded them the dignity of genus by the title of "leishmania." This adaptation of Leishman's name has, in time, come to be applied to the whole group of diseases now known as "leishmaniasis." In 1003 Donovan in India recorded parasites similar to those described by Leishman in the tissue of patients dying of kala-azar, after which the organism, therefore, came to be known as the Leishman-Donovan body. And in the same year J. H. Wright, confirming Cunningham, saw bodies in an oriental sore which later became known as the parasite of oriental sore, or "Delhi boil" as it is sometimes called, and has been scientifically termed "Leishmania tropica." In 1004 came Rogers's substantiation of Leishman's original view as to the parasite. The group of diseases is now much expanded. Similar parasites were found in sores in Brazil by Lindenburg, Carini, and Paranhos in 1000; Splendore and Carini showed that the peculiar ulceration of the pharynx and nares in South America, commonly known as bubas, was also leishmaniasis. It is now known that kala-azar has almost a world-wide distribution; it has been found in Central Africa and Northern China, while a similar disease is very common in the Aegean Islands and the Mediterranean area, where it attacks both children and dogs. The disease group which bears Leishman's name is, therefore, of high economic importance, as one of the most widespread scourges which afflict mankind.

From 1905 onwards Leishman devoted much of his time to the observation of pathogenic spirochætes, especially *Treponema pallidum* and the allied parasites of yaws and relapsing fever. His early investigations were concerned with the morphology of these spirochætes and the relation which might exist between European and African forms, but he found it was impossible to substantiate any morphological differences. He expended great labour in attempting to cultivate these organisms in artificial media, and observed in so doing the peculiar agglutination of the spirochæte. His experiments were afterwards directed towards the changes undergone by the spirochætes in the tick's body, and the manner in which hereditary transmission takes place in the arthropod. He found it impossible to trace the spirochætes in the body of a tick later than the tenth day after feeding, and his researches on the eggs laid by infected ticks were negative. While these experiments were in progress he was struck by the frequent occurrence of clumps of granules in various parts of the tick's body which he suspected as being of parasitic nature, and which he continued to regard as stages of the development of the spirochæte; and later, when the advantage of the dark-ground illumination method came in he was able to satisfy himself that young spirochætes actually developed from these granules. His researches on this subject were made the subject of a summary in the Horace Dobell lecture delivered before the Royal College of Physicians of London in 1920. Much of this work has been confirmed by Nicolle and his colleagues in their observations upon the development of the spirochæte in the louse, in which gradually the organisms appear to undergo a life-history similar to that described by Leishman.

To go back in the tale, in 1903 Leishman succeeded Wright as Professor of Pathology in the Royal Army Medical College when, in addition to discharging the arduous duties of the post with the spirit which bore splendid fruit during the whole ten years of his office, he carried out a scheme in respect of antityphoid inoculation which had been already devised by Wright and himself. This was to inoculate a series of groups of men with different doses of typhoid vaccine, afterwards measuring their immunisation curves with a view to selecting the optimum dose of vaccine, which was thus fixed at 1000 millions for the first dose. The work which Leishman did in the introduction of vaccine and inoculation against typhoid fever constitutes his most important contribution to medicine, far-reaching as the other discoveries have been or may be. This method had already been tried during the South African War, but the reaction that it produced, and the ill-health which resulted from the inoculation as then prepared, was too severe, allowing a certain class of critic to insist that the cure was worse than the disease. But from 1902 onwards, Leishman, in association with Wright, busied himself in the preparation of a less potent preparation. The early experiments were summarised in the Harben lecture for 1910, and published in the *Journal* of the Royal Institute of Public Health and are familiar to all. The original ravages of enteric fever in India amongst the British garrisons, where it was especially prevalent, were taken into account as well as the lessons of the South African War, when there were no less than 57,000 cases of enteric fever with over 8000 deaths. To the subsequent intensive study we owe the preparation of the typhoid vaccine which was used with such success in the recent war, a success mainly lying in the observations of the growth of the organism and in the details of the technique of sterilisation. The result achieved is now universally recognised and the lessons have been published widely. They were well set out by Leishman himself in a paper entitled "Enteric Fevers in the British Expeditionary Force of 1914–1918" and published in the *Glasgow Medical Journal* in 1921. From this paper we learn that he first decided that the best protection could be obtained by the initial test of 500 million organisms, followed a week or so later by one double that amount. The immediate returns appeared to be unfavourable to the continuance of this method, but it was ascertained that the increase of cases was due to the paratyphoid organisms, and when these were added to the vaccine almost complete protection was produced—a striking vindication of Leishman's work. As the result of the inoculation of the vaccine there was secured for our men a considerable measure of protection against the paratyphoid infection as well as against typhoid, though the immunity produced against the former was not of such a high degree as against the latter. We may quote the remarkable figures. In 115, in the strength of over 600,000 troops there were only 570 cases of enteric fever notified with 34 deaths; a striking comparison with the figures of 14 years previously in South Africa.

While all this original work was in process Leishman was winning a wonderful name for himself, for he developed powers of teaching which a large number of officers can testify proved to be of the highest value to them. Many we know would speak with real gratitude of the good derived from his instruction and guidance. He was a most patient and painstaking instructor—nothing here seemed a trouble to him that would assist in explaining a point or clearing up a difficulty; he was an able and even brilliant lecturer, and it is no wonder that his work should have borne the fruit that it did.

At the outbreak of war Leishman, officially described as Expert in Tropical Diseases on the Army Medical Advisory Board, was directed to join the Expeditionary Force on Oct. 3rd, 1914, and was attached in an advisory capacity to the staff of the D.M.S. of the Force. A few months later the designation of "Adviser in Pathology" was attached to the post. The following list will give some idea of the different lines of work which had devolved on him by the year 1917: 1. Adviser in pathology to the Expeditionary Force. 2. Member of the Advisory Board of the Director-General, Medical Services, G.H.Q. 3. Chairman of research committees on trench fever and on nephritis. 4. Inspection of all mobile and hospital laboratories, at the front and on the lines of communication. 5. Coördination of the work done in the laboratories. 6. Recommendations on appointments to the charge of laboratories. 7. Advice on the installation and equipment of new laboratories. 8. Distribution of laboratories and pathologists to meet local emergencies. 9. Advice to medical store department on laboratory equipment, reagents, apparatus, &c. 10. Advice on all matters relating to the supply and employment of sera and vaccines. 11. Advice on tropical and parasitic diseases in native troops and labour contingents. 12. Collaboration with the A.D.M.S. (Sanitation) in the control of infectious disease. 13. Collection and analysis of returns relating to enteric fever and tetanus. 14. Reports to the D.G.M.S., G.H.Q., and to the D.G.A.M.S., War Office. 15. Arrangements for the collection of pathological specimens. 16. Member of the Inter-Allied Sanitary Commission, Paris. 17. Member of the Inter-Allied Surgical Conference, Paris. 18. Liaison with the pathological work of the armies of the Allies. Even this list is not exhaustive; it is set out to show the multifarious and important responsibilities which had accrued to him by the time the critical later stages of the war were reached; that he should have fulfilled them satisfactorily makes a splendid record of service, and that he should have been instructed to undertake them proves what the estimate of him was in the highest places.

When the Directorates of Pathology and Hygiene were formed at the War Office in 1919, Sir William Leishman was appointed Director of Pathology and remained in that appointment until 1923. During those four years his activities were far-reaching, and his work established the newly formed directorate on a solid and enduring foundation. His advice and support to the then Director-General on matters concerned with pathological science were of extreme value, as Sir John Goodwin has testified, both to his official chief and to the Army generally. In 1923 he was appointed to be Director-General of Army Medical Services at the War Office, an onerous post, the duties of which he was performing with the greatest distinction and ability when he was cut off in the midst of his work, and just when so many of the problems and projects in which he was engaged bore promise of ampler fruition. While many regretted the necessary break constituted in a brilliant scientific career by the call to become Director-General, there were at least as many who recognised that Leishman's right to be the head of the Service was so incontestable that any other appointment would have been open to criticism, while it was certain that he would bring to that position the qualities which he had already displayed in scientific and official fields, to the great benefit of an organisation to which he was devoted.

Outside the Army Medical Service Leishman's appointments and responsibilities were also great and various. He was a member of the Yellow Fever Commission, West Africa (1913–15), and of the Medical and Sanitary Advisory Committee for Tropical Africa at the Colonial Office; he was for ten years a member of the Medical Research Council, vacating his seat on appointment as Director-General; he was a member of the Scientific Advisory Committee of the British Empire Cancer Campaign, quite recently he was appointed chairman of the Foot-and-Mouth Disease Research Committee of the Ministry of Agriculture; he was a past President of the Society of Tropical Medicine and Hygiene and had acted as examiner in pathology at Oxford and in tropical medicine at Cambridge. Just before his death he was elected President of the Section of Comparative Medicine at the Royal Society of Medicine, an appointment which shows alike that the wide range of his learning was appreciated by colleagues, and that his own desire was keen to remain actively associated with scientific work as far as the duties of his high official post would permit him to do so. His contributions to medical and scientific literature were numerous and particularly instructive as being personal records. These papers will be found in THE LANCET, *British Medical Journal*, the *Journal of Tropical Medicine and Hygiene*, the *Journal of the Royal Army Medical Corps*, the *Glasgow Medical Journal*, the *Journal of the Royal Institute of Public Health*, as well as in the Transactions of the Royal Society, while he also wrote the article on kala-azar in Allbutt and Rolleston's "System of Medicine"

In 1910 Leishman was elected a Fellow of the Royal Society, and served for two years as Vice-President. He was knighted in 1909, and in 1912, having just been promoted Colonel, he was appointed honorary physician to the King. He was created C.B. in 1915, K.C.M.G. in 1918, and K.C.B. in 1921, and was continually mentioned in dispatches during the European War; he was a Companion of the Legion of Honour and held the Distinguished Service Medal of the United States Army.

The story thus set out indicates a life that was lived to the extreme limits of intellectual ability and physical capacity, but it remains to add that the brilliant researcher and competent official was the simplest of men, transacting his duties with no evidence of strain and bearing his honours without a trace of manner. As far as possible, he seemed to efface himself, his courtesy was clearly genuine, his personal kindness can be testified to by a large series of contemporaries and juniors, and his generosity to fellow workers was unfailing. His premature death after a brief illness was a real grief to friends, colleagues, and a big and various public.

Sir William Leishman married, in 1902, Maud, eldest daughter of the late Colonel E. Gunter, by whom he had one son and three daughters, to whom all sympathy in their loss will be extended. The funeral service was held in the Chapel at the Military Hospital, Millbank, conducted by the Rev. A. C. E. Jarvis, Chaplain-General to the Forces, assisted by the Rev. C. Thacker, Chaplain to the Hospital, and the Rev. P. McCormick, the Westminster Abbey choir attending. The King and the Queen were represented at the impressive service, as were the numerous public bodies in whose conduct Sir William Leishman had played so prominent a part. The pall-bearers were drawn from the heads of the medical services of the Navy, Army, and Air Force, and a guard of honour with regimental band was provided by the Grenadier Guards, the route being also lined by officers of the R.A.M.C. and nursing sisters. The funeral was conducted privately at Highgate.

## SIR STEWART STOCKMAN, M.R.C.V.S.

BY the death of Sir Stewart Stockman veterinary science has suffered a severe loss. His name will be permanently associated with the courageous stand to eradicate from this country the menace of foot-and-mouth disease. He had the strength of character to press his professional convictions into effective execution in spite of much adverse clamour, and in so doing gained the confidence of the Government department he served, of the veterinary profession, and, still more important, of the farming community which came to regard him as a wise and trusted counsellor.

Born in 1869, the fourth son of the late Mr. W. J. Stockman, merchant, of Edinburgh and Leith, he received his early education at the Edinburgh High School and his veterinary training at the Royal (Dick) Veterinary College, Edinburgh, from which he qualified as member of the Royal College of Veterinary Surgeons in 1890. Subsequently he studied abroad, chiefly at the École Nationale Vétérinaire, Alfort, Paris, and then occupied the posts successively of demonstrator of pathology and professor of pathology at the Royal (Dick) Veterinary College, Edinburgh. In the course of these years he came into intimate contact with the masters of comparative pathology—Nocard, in France, and McFadyean, in England. He resigned his teaching appointment in 1900 to serve in the South African War, and after the termination of the war accepted a post in the Indian Civil Veterinary Department. He was among the first batch of civilian veterinary surgeons to occupy posts in this department, and his stay in India—an ideal training-ground for the epizoologist—though brief, gave him opportunity to demonstrate his capacities; his work on cattle plague (rinderpest) ranks as a real contribution to knowledge among a mass of misleading information based on faulty field observation. He was then selected for appointment as principal veterinary officer to the Transvaal, in which capacity he served for three years. His South African experience, though again short, was eventful. In 1896 cattle plague had spread southwards, causing terrible havoc among the cattle population of South Africa and depriving the inhabitants of their main means of support. Later alarming new epizoötics appeared, notably the piroplasmoses ("redwater") and East Coast fever. With the brilliant collaboration of Sir Arnold Theiler, then veterinary research officer to the Transvaal, the rationale of control was elucidated, and Stockman realised its execution by introducing a system of veterinary police control which still remains

In 1905 Stockman was appointed chief veterinary officer to the Board (now the Ministry) of Agriculture and Fisheries, to administer the Diseases of Animals Acts At the time of his appointment there was hardly any research work executed by the veterinary department of the Board. Stockman's activities lay in two directions—first, in the organisation of a field service composed wholly of qualified men, and, secondly, in the establishment of a properly staffed and equipped research section. With the hearty support of Mr. Walter Runciman there was erected, near Weybridge, a first-class laboratory—the first institute in the United Kingdom for research into prevalent animal diseases. Under the able direction of Stockman, who was appointed director of veterinary research to the Ministry, a series of valuable researches was carried out, all with direct bearing upon the problems of animal husbandry. Even before adequate laboratory facilities were forthcoming a piece of work on bovine epizoötic abortion was performed in collaboration with Sir John McFadyean. Since then "redwater" and other diseases of cattle, scrapie and louping-ill of sheep, swine fever, certain diseases of poultry have been studied, and, at the present time, experimental work upon a large scale is being carried out upon the nature of the foot-and-mouth virus.

Although in the course of his lifetime Stockman attained international repute as an experimentalist and a shrewd and conservative observer in researches into animal disease it is as an epizoölogist, a veterinary Gorgas, that he will chiefly be remembered. He worked without ceasing to free British livestock from the incursions of contagious disease, and succeeded to a degree unknown in other countries; witness the work done under his direction to suppress rabies, to eliminate glanders, to mitigate the ravages of swine fever by means acceptable to the agriculturist, and to bring about the dwindling incidence of sheep scab. His efforts to prevent foot-and-mouth disease from becoming an ever-imminent danger to the existence of our herds told heavily upon his physical health in recent years. He had just returned from a tour in the Argentine, undertaken for the purpose of investigating there the conditions of the meat trade with this country. The state of his health prevented taking up further duties on his return, and he journeyed to Glasgow to obtain advice and treatment from his brother, Prof. Ralph Stockman. He died suddenly on June 2nd and was buried at Warriston Cemetery, Edinburgh.

Stockman was joint editor of the *Journal of Comparative Pathology and Therapeutics*, a member of the Council of the Royal College of Veterinary Surgeons, President of the Royal College of Veterinary Surgeons for the year 1924–25, a former member of the Council of the Royal Society of Tropical Medicine and Hygiene, member of the managing committees of the Tropical Diseases Bureau and Imperial Bureau of Entomology, and a member of the Board of Governors of the Royal Veterinary College, London. He had edited Walley's "Meat Inspection," among other publications. He received the honour of knighthood in 1913. He married in 1908 Ethel, elder daughter of Sir John McFadyean, and leaves a widow and two daughters.

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THE LATE DR. W. HOOD.—Dr. William Hood, who died at York on May 27th at the age of 88, had an unusually interesting life. He was born at York, the son of a wine merchant, and was educated at St. Peter's School. As a lad he served as apprentice to a doctor in St. Leonards before going to St. Bartholomew's Hospital, and after qualifying as M.R.C.S. Eng. in 1860 and as L.S.A. in 1861, went back for a time to York as an assistant. Then he became surgeon in the Royal West India Mail Service and worked on the paddle boats running between Mexico and Panama. From this time onwards he travelled much, and at the age of 73 set out alone on a tour of Russia and Finland. Crossing Russia with the idea of getting through to Persia he was held up on the frontier, but succeeded in reaching Baku and made his way home by way of Vienna. A year later he went round the world, also unaccompanied, and his robust health is shown by the fact that until two years ago he enjoyed bicycling. Dr. Hood settled in practice at York in 1863 and married Miss Frances Lockwood, a cousin of the late Sir Frank Lockwood, M.P. He became medical officer to the York Union and served the city in that capacity and as public vaccinator for nearly 50 years, retiring in 1911. He was a keen collector of antiques, and especially of old prints. Dr. Hood's wife died in 1910; he leaves a daughter and four sons, one of whom is a member of the medical profession.

# Medical News.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

THIRD (M.B., B.S.) EXAMINATION FOR MEDICAL DEGREES.

*Honours.*—Kathleen M. Bowman-Manifold (*a*, *b*), London Sch. of Med. for Women; Robert B. Brew (*b*), Univ. Coll. Hosp.; Anacletus Byrne-Quinn (*d*), St. Thomas's Hosp.; Joseph T. Fathi (*d*), London Hosp.; Margaret A. Harrison (*a*) and Marjorie Low (*a*), London Sch. of Med. for Women; Mary C. Luff (*b*), Univ. Coll. Hosp.; William A. Mill (*d*), Guy's Hosp.; Joseph Shepherd (*a*), Univ. Coll. Hosp.; Hyman Simmonds (*d*), St. Bart.'s Hosp.; J. H. Simmons (*a*), King's Coll. Hosp.; Jean L. Smith (*a*), Charing Cross Hosp.; Dorothy E. Stewart (*e*), London Sch. of Med. for Women; and Robert M. Walker (*d*, *e*, University medal), Univ. Coll. Hosp.

(*a*) Distinguished in Medicine. (*b*) Distinguished in Pathology.
(*d*) Distinguished in Surgery. (*e*) Distinguished in Midwifery.

*Pass.*—Russel C. Amies, St. Thomas's Hosp.; Constance E. Appleton, King's Coll. Hosp.; Edgar C. Archer, St. Thomas's Hosp.; Edward Bacon and Roderick T. Bannister, St. Bart.'s Hosp.; James M. Barnard, Charing Cross Hosp.; Cyril E. Beare, Middlesex Hosp.; Harold C. Beccle, Guy's Hosp.; John G. Y. Bell, King's Coll. Hosp.; Judah S. Benzecry, Univ. Coll. Hosp.; Samuel Berman, Guy's Hosp.; Frank A. Bevan, St. Bart.'s Hosp.; Owen P. Bowers, St. George's Hosp.; Margery G. Blackie, London Sch. of Med. for Women; John R. Blazé, Ceylon Med. Coll. and Univ. Coll. Hosp.; Anna M. V. Bonhote, King's Coll. Hosp.; Harry C. Boyde, St. Bart.'s Hosp.; Lucy Burnett and Olive K. Burnett, London Sch. of Med. for Women; Laurence W. Cann, Guy's Hosp.; Elizabeth J. Carpenter, London Sch. of Med. for Women; Walter S. Chapman, Univ. Coll. Hosp.; Francis W. Charman, King's Coll. Hosp.; Enid Clarke, London Sch. of Med. for Women; Violet H. Comber, Univ. Coll. Hosp.; Louis N. R. Comty, London Hosp.; Victoria M. Crosse, London Sch. of Med. for Women; Evelyn J. Curtis, King's Coll. Hosp.; Philip E. J. Cutting, St. Bart.'s Hosp.; Gweneth M. Daniel, Westminster Hosp.; David J. Davies, Middlesex Hosp.; Thomas D. Deighton, St. Bart.'s Hosp.; Mathew De Lacey, London Hosp.; Alma Downes-Shaw, King's Coll. Hosp.; George E. Ellis, St. Bart.'s Hosp.; Harry G. Estcourt, Middlesex Hosp.; William G. Evans, St. Mary's Hosp.; Christabel S. Eyre, Charing Cross Hosp.; Rachel D. Fox, London Sch. of Med. for Women; Duncan B. Fraser, St. Bart.'s Hosp.; Ernest B. Garrett, Univ. Coll. Hosp.; Winefride M. Gibson, Charing Cross Hosp.; John F. E. Gillam, St. Thomas's Hosp.; Edith L. Gould and Agnes H. S. Gray, London Sch. of Med. for Women; Francis H. K. Green, St. Bart.'s Hosp.; Charles S. Hallpike, Guy's Hosp.; Helen M. Harris and Leila M. Hawksley, London Sch. of Med. for Women; Thomas R. Hill, Guy's Hosp.; Katherine M. Hirst, London Sch. of Med. for Women; Janet K. Holgate, Univ. Coll. Hosp.; Ruth T. Hurnard, London Sch. of Med. for Women; Kenneth M. N. Isaacs, London Hosp.; Arthur D. W. Jones, Westminster Hosp.; Ronald H. Knight, St. Bart.'s Hosp.; Geoffrey L. S. Kohnstam, King's Coll. Hosp.; Mary Langdon-Down, London Sch. of Med. for Women; Nora M. Leesmith, St. Mary's Hosp.; Samuel Lerner, Univ. Coll. Hosp.; Lewis O. Lindsay, London Hosp.; Dorothy M. Llewellin, Westminster Hosp.; Kathleen M. Lyons and Duncan C. McIntosh, Univ. Coll. Hosp.; James H. Macpherson, King's Coll. Hosp.; Joan G. Malleson, Charing Cross Hosp.; Eva M. Malmberg, King's Coll. Hosp.; George R. Marcano, St. Thomas's Hosp.; Frank Marsh, Guy's Hosp.; Derrick J. Martin, London Hosp.; Florence I. J. Masterman and Dorothy G. Medway, London Sch. of Med. for Women; Alfred Mitchell, King's Coll. Hosp.; John P. Monkhouse, St. Mary's Hosp.; Mary A. Monro and Florence I. R. Moore, London Sch. of Med. for Women; George S. Morgan, St. Bart.'s Hosp.; Gwyn J. Morris, Middlesex Hosp.; Norman Moulson, St. Bart.'s Hosp.; Margaret I. Neal, London Hosp.; Grace H. Nicolle, London Sch.. of Med. for Women and St. Mary's Hosp.; Gwynedd Mary E. Olive, London Sch. of Med. for Women; John O. Oliver, St. Thomas's Hosp.; John Parrish, St. Bart.'s Hosp.; Howard L. Peake, Guy's Hosp.; John Pearce, Westminster Hosp.; Noël R. Pooler, St. Mary's Hosp.; Dorothy F. Pratt, London Sch. of Med. for Women; Leslie Reuvid, Univ. Coll. Hosp.; Gordon H. Roberts, Charing Cross Hosp.; Victoria A. Roberts, London Sch. of Med. for Women; Allan B. Robinson, St. Thomas's Hosp.; May E. Rogers, London Sch. of Med. for Women; Harold N. Rose, St. Bart.'s Hosp.; Annie E. G. Rowlands, Univ. Coll. Hosp.; Marjorie Rushbrooke, University of Birmingham; Doris M. F. Russell, London Sch. of Med. for Women; Alan R. Rutnam, Middlesex Hosp.; Joseph Ryland-Whitaker, University of Edinburgh; Frederick W. Schofield, Guy's Hosp.; Thomas A. Seekings, Univ. Coll. Hosp.; Constance G. Sloan, St. Mary's Hosp.; Leonard Smalley, St. Thomas's Hosp.; Rachel M. S. Smellie, St. Mary's Hosp.; Beatrice G. Smith, Univ. Coll. Hosp.; Ralph Stanford, London Hosp.; Adrian L. Stephen and Ian H. Stevens, Univ. Coll. Hosp.; Frederick O. T. Strange, King's Coll. Hosp.; Basil R. Sworn, St. Thomas's Hosp.; Josephine I. Terry, St. Mary's Hosp.; Basil M. Tracey and Herman Treissman, St. Bart.'s Hosp.; Kathleen C. Vost, St. Mary's Hosp.; Larner B. Ward, St. Bart.'s Hosp.; Hilda M. Weber, Univ. Coll. Hosp.; Janet Welch, London Sch. of Med. for Women; Harry V. Wells, Charing Cross

Hosp.; William S. Whimster, Guy's Hosp.; Dahlia Whitbourne, Gwendolen L. Wilkins, and Katharine G. L. Williams, London Sch. of Med. for Women; Ada R. Winter and Dorothy E. Wright, Univ. Coll. Hosp.; and John C. Young, Guy's Hosp.

University of London Club.—A reception will be held by the chairman, Dr Walter Seton, and members of the committee of the club, at the Club House, 21, Gower-street, London, W.C., on Tuesday, June 22nd, from 8.30 to 11.30 P.M., to meet the Vice-Chancellor, Prof. Ernest Gardner, and the members of the Senate.

Indian Medical Service Dinner Fund.—The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant on Wednesday, June 16th. Lieut.-Colonel R. H. Elliot will take the chair. Tickets and all particulars may be had from the joint hon. secretary, Colonel J. J. Pratt, 18, Nevern Mansion, Warwick road, London, S.W. 5.

The late Prof. Babák.—Edward Babák, professor of physiology in the Masaryk University and Veterinary College in Brno, Czecho-Slovakia, died suddenly on May 29th, at the age of 53. His researches on the regulation of the respiratory movements are well known and his work on the influence of the endocrine glands on the metamorphosis of amphibia is no less important. His last published work is a book on the Biology of the Child. He was a remarkable teacher and built up a considerable school of physiology. Until 1918, when he was entrusted by the Government with the organisation of the Masaryk University and Veterinary College in Brno, he held the post of professor of physiology at the Charles University of Prague. Prof. Babák was the founder of the Biological Society of Czecho-Slovakia and of the journal *Biologicke Listy*.

Royal College of Surgeons of England: *Jacksonian Prize.*—The subject for this prize for 1926 is the Pathology, Diagnosis, and Treatment of Abscess of the Brain. The subject for 1927 is the Pathology, Diagnosis, and Treatment of Bronchiectasis and Abscess of the Lung. The dissertations for the prize for either year must be delivered at the College not later than Dec. 31st of that year.

*Cartwright Prize.*—The administration of the fund for this prize, founded by the "Association of Surgeons practising Dental Surgery" with the object of commemorating the services of Samuel Cartwright, F.R.C.S., in improving the status of the dental profession, has been entrusted to the Royal College of Surgeons of England, and the prize is now offered for competition under the following conditions. It will be awarded quinquennially, the next award being for the five years ending Dec. 31st, 1930. The prize consists of a medal executed in bronze and an honorarium of £35. The subject for the essays to be submitted in competition for the prize is the Ætiology, Pathology, and Treatment of Chronic General Periodontitis (Pyorrhœa Alveolaris). Candidates must be persons engaged in the study or practice of dental surgery and possessing qualifications capable of registration under the Medical Acts of the United Kingdom. Further particulars as to both these prizes may be obtained from the Secretary at the College.

Fellowship of Medicine and Post-Graduate Medical Association.—Two clinical demonstrations will be held on June 16th. At 12 noon Mr. Greeves will give a demonstration in Ophthalmology at the Royal London Ophthalmic Hospital, City-road, E.C., and at 2 P.M. Mr. Sidney Boyd will hold a surgical one at the Hampstead General Hospital, Haverstock Hill, N.W. From July 5th to 17th the National Hospital for Diseases of the Heart will hold an intensive course. Beginning on the same date there will be an afternoon course at the Hospital for Diseases of the Skin, Blackfriars. Instruction will be given in the out-patient department, and venereal clinics will be held bi-weekly. Special attention is drawn to the one week's special course in obstetrics which the City of London Maternity Hospital hopes to begin on July 5th, of which further details will be announced later. There will be a fortnight's special course of demonstrations at the Royal Eye Hospital from July 12th to 24th, from 3 P.M. onwards. All the members of the staff of the hospital will participate in these and will demonstrate on the various aspects of diseases of the eye. There will be an intensive course at the Prince of Wales's General Hospital, Tottenham, N., from July 10th to 31st, in medicine, surgery, and the specialties. Clinics will be held throughout the day in the various departments of the hospital and there will also be demonstrations in Fevers and Mental Diseases. From July 19th to August 14th the West End Hospital for Nervous Diseases will hold a late afternoon course (from 5 o'clock) in Neurology. Copies of all syllabuses, of the General Course programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship of Medicine, at 1, Wimpole-street, London, W.1.

Royal College of Physicians, Edinburgh.—The George Alexander Gibson Memorial lecture on the Failing Heart will be delivered in the hall of the College on June 23rd and 24th, beginning each day at 5 P.M., by Dr. John Cowan.

Dr. Gerhard Hotz, professor of surgery at the University of Basle and director of the Surgical Clinic, died on June 5th of a perforated gastric ulcer, in his forty-sixth year.

London (R.F.H.) School of Medicine for Women.—On June 25th, at 3.30 P.M., Sir John Ferguson will present prizes and certificates. Lady Barrett, Dean of the School, will be in the chair.

A new solarium in connexion with the Tuberculosis Dispensary, 105, Grange-road, Bermondsey, will be opened on June 12th, at 3 P.M., by the Mayor of Bermondsey (Councillor I. Stokes). An address on Sunlight and Open Air will be given by Dr. Leonard Hill, F.R.S.

The Cripple Problem.—Sir Robert Jones, Emeritus President of the British Orthopædic Association, will give an address, for the Essex County Council, on the Cripple Problem, at River Plate House, 7–9, Finsbury-circus, London, E.C., at 3 P.M., on Friday, June 18th.

Dr. Norman Tattersall, who has been for the past 14 years tuberculosis physician for the Mid-Glamorgan area of the Welsh National Memorial Association, has been appointed tuberculosis physician to the City of Leeds. On May 22nd, at Bridgend, Glamorgan, he was the guest of a number of his medical friends at a dinner at which a bureau and illuminated address were presented to him.

A Windfall for Dublin Hospitals.—By his will the late Mr. William Dobbs McDonnell, of Shankill, Co. Dublin, who died on March 24th, bequeathed the residue of his estate, subject to certain legacies, to three Dublin hospitals. The question as to which of the Dublin hospitals should benefit was left to the President of the Royal College of Surgeons, Mr. R. C. B. Maunsell. Mr. Maunsell has now decided that the residue of the estate, amounting to about £10,000, is to be divided equally between Sir Patrick Dun's Hospital, Mercer's Hospital, and the Royal Hospital for Incurables.

Ross Institute for Tropical Diseases.—The Prince of Wales will on July 15th formally open the Ross Institute and Hospital for Tropical Diseases at Tibbett's Corner, Putney Heath. The Institute has been founded to commemorate the twenty-fifth anniversary of the discovery by Sir Ronald Ross of the transmission of malaria to human beings through the bite of the anopheline mosquito. It will be devoted to laboratory research and clinical investigation. Its objects are to carry on intensive research work in the prevention and treatment of tropical diseases, to assist medical men interested in such diseases to make researches, to receive in the hospital sufferers from tropical affections, and to create more interest in malaria and disease control work. Bath House, a large modern residence, has been bought and adapted at a cost of about £25,000, and the working expenses are estimated at from £8000 to £10,000 a year. The first patient was Sir Ronald Ross himself, a resident of Putney, who was taken ill in November last, but was able to leave in five days.

Royal Society of Medicine.—At the social evening held on June 7th Prof. Frederick Hobday gave a short address entitled "Our Animal Friends as Patients." He claimed that animals have the right to receive the best possible attention which modern veterinary skill can give them, and their owners should see that they receive it. He proceeded to consider under the headings of the various sections which compose the Royal Society of Medicine the question of veterinary in comparison with human treatment, and showed on the epidiascope cases in which the treatment of animals by modern medicine and surgery was almost identical with that given by the physician and surgeon to man. Attention was drawn to those common contagious diseases of domestic pets which were likely to infect man. Pictures were shown of the methods applied in the Royal Army Veterinary Corps during the war for the comfort of the horses and mules on each of the fronts. Referring to the intelligence, almost human, of horses and dogs, he gave detailed accounts of the experiences he had had with highly trained individual animals, showing that the reasoning powers of these creatures can be developed to a wonderful extent. The lecture was preceded by a conversazione, at which a large number of specimens were shown.

**RETIREMENT OF THE REGISTRAR-GENERAL OF THE IRISH FREE STATE.**—Sir William J. Thompson has just retired from the office of Registrar-General of the Irish Free State, having reached the limit of age. He was appointed to the office in 1909, having previously been a physician in Dublin and senior physician to Jerves-street Hospital. He had the chief responsibility for carrying out the census of 1911 and had much of the work of the preparation for the recent census. During his tenure of office he maintained the friendliest relations with medical men who were brought into touch with his department, and the profession in general regrets his retirement. It has been announced that the Government does not intend to fill the vacancy, but that in future the duties of the office will be performed by an official of the department of Local Government and Public Health.

**TUBERCULOSIS CONFERENCE.**—The twelfth annual conference of the National Association for the Prevention of Tuberculosis is to be held in Glasgow from Thursday to Saturday, July 1st to 3rd. The Lord Provost of Glasgow will formally open the conference at the McLellan Galleries, Sauchiehall-street, at 10.30 on Thursday morning, when the subject for discussion will be the Provision for the Care of Non-pulmonary Tuberculosis, to be opened by Dr. A. S. M. MacGregor, M.O.H. Glasgow, and Mr. James Taylor, consulting surgeon to the Glasgow Corporation Hospitals and Sanatoria. In the afternoon Sir Robert Philip will open a discussion on the Actual Place and Function of the Tuberculosis Dispensary in the Tuberculosis Scheme. A formal reception by the Lord Provost and magistrates will be held at 7.30 P.M. On Friday papers will be read as follow: on Experimental Studies in Tuberculosis, by Prof. C. H. Browning; on the Age-Factor in the Incidence of Tuberculosis, by Dr. J. A. Wilson; on Some Experiences in the Treatment of Tuberculosis by Artificial Sunlight, by Dr. Alexander Smith; and on Glasgow's Solution of the Smoke Problem, by ex-Bailie W. Brownhill Smith. On Friday afternoon visits will be paid to Corporation housing schemes and sanatoria and to the Hairmyres Tuberculosis Colony. On Saturday demonstrations will be given on radiography of the chest, the methods of treatment of non-pulmonary tuberculosis, and visits paid to various dispensaries and sanatoria. Further information from the Secretary of the National Association, 20, Hanover-square, London, W. 1.

**PRESENTATION TO DR. HERBERT JONES.**—Dr. Gerard Steel, President of the Herefordshire Medical Society, accompanied by Dr. John Steed, hon. treasurer of the society, and Dr. J. R. Bulman, hon. secretary of the Hereford Division of the B.M.A., recently presented a testimonial to Dr. Herbert Jones which took the form of a Sheffield plate casket, suitably inscribed, and containing a cheque for £250; it was accompanied by a list of the names of the subscribers. Dr. Steel referred to the privilege and honour conferred upon him in that it fell to his lot to present the casket and its contents as a token of the esteem in which he (Dr. Herbert Jones) was held by the whole profession. He then read extracts from letters which had been received from subscribers to the testimonial and continued: "You must feel great satisfaction in hearing these many expressions of gratitude for the good work you have done. They are a certain proof that the whole of your professional life is approved and acknowledged by your confrères, who sincerely wish you the peace and comfort in your retirement which you so richly deserve. At the same time they hope that you will always be available for them to ask for your help in all cases of difficulty when your ripe knowledge, experience, and judgment will be invaluable, as has ever been the case, for you have never failed in your integrity to your professional brethren by your tact and kindness to one and all." Dr. Herbert Jones thanked everyone who had helped in the testimonial. The work had ever been a labour of love. In glancing through the names on the list of subscribers he was much touched to notice not only the names of many old friends, but of several men who were scarcely known to him.

The following is the final list of subscribers:—

*£10 10s.*—*West of England Branch of the Soc. of M.O.H.; Midland Branch of the Soc. of M.O.H. (per Dr. Ridley Bailey).

*£3 3s.*—†Sir William H. Willcox, K.C.I.E.

*£2 2s. 6d.*—Dr. Alex. Robb, Edinburgh.

*£2 2s.*—Drs. H. Hanslow Brind, West Byfleet,; *Mabyn Read, and *P. H. Stirk.

*£1 1s.*—*Drs. George Adkins, *F. J. Allan, Sir Robert A. Bolam, Newcastle-on-Tyne; *Joseph Coates, Howard Davies, Pontypridd; R. Green, Stroud; H. W. Harding, Edmonton; *A. Bostock Hill, T. E. Hincks, Hay; *J. Johnstone Jervis, C. Courtenay-Lord, Orpington; Edward H. Nash, Cranford; *H. Cooper Pattin, *W. G. Savage, *C. E. Tangye, T. M. Tibbets, Old Hill, Staffs; W. W. Wells, Bromyard; ‡ James Wheatley, Shrewsbury; and J. Arthur Wood, Rugby.

*10s. 6d.*—H. Dundas McCall, Leominster.

* Per *The Medical Officer.*
† Per *British Medical Journal.*
‡ *Second subscription.*

# Parliamentary Intelligence.

## HOUSE OF LORDS.

### TUESDAY, JUNE 8TH.

### *Midwives and Maternity Homes Bill.*

The House went into Committee on the Midwives and Maternity Homes Bill, the EARL OF DONOUGHMORE in the chair.

Part I. of the Bill amends the Midwives Acts, 1902 and 1918. Clause 1 provides that if any person, being either a male person or a woman not certified under the Bill, attends a woman in childbirth otherwise than under the direction and personal supervision of a duly qualified medical practitioner, that person shall, unless he or she satisfies the court that the attention was given in a case of sudden or urgent necessity, be liable on summary conviction to a fine not exceeding £10.

Lord STANMORE moved an amendment to provide that the clause should not apply in the case of a person who, while undergoing training with a view to becoming a duly qualified medical practitioner or a certified midwife, attended a woman in childbirth as part of a course of practical instruction in midwifery. He explained that his object was to safeguard the midwifery training of medical students and pupil midwives. As the clause stood no medical student could attend a woman in childbirth, except under the personal supervision of a qualified medical practitioner. It was possible that, in the future, the courts might hold that the words "personal supervision" implied the actual presence of a qualified medical officer. If that were to be the case the present system of midwifery training would become unworkable. Referring to the training of the students, the noble lord said that it was very unusual where a student had to deal with an emergency case, that the delay of an hour or so before a qualified practitioner came had any bad effect on the patient. The student, having had four years obstetrical training, was in a position to give general treatment while awaiting the arrival of his colleague. He did not think any authority on obstetrics would consider it necessary that a student should be accompanied by a medical man in all the cases that he had to attend. On the contrary, he could not learn his work properly without having responsibility during his period of training. The case of the pupil midwife was very similar to that of the student. An untrained woman had to go through a course of training for 12 months and a trained nurse for six months. Training was carried out under the superintendence of experienced midwives, who were recognised by the Central Midwives Board. It was not only undesirable that they should be subjected to the personal supervision of the medical man in all these cases, but if that supervision was insisted on it might have the effect of greatly reducing the number of midwives.

Viscount KNUTSFORD, in supporting the amendment, said that only the other day all the medical schools in London met and proposed that an amendment should be moved to the Bill very similar to that of Lord Stanmore. He was sure their lordships would accept the amendment with perfect certainty that the women who were being treated would be properly attended to and that the pupils or students would be properly taught. He thought the word "training" in the amendment should be strengthened by the substitution of the words "training recognised by the General Medical Council or the Central Midwives Board." Anything might be "training," and they must be quite sure that nobody was allowed to attend a woman in confinement unless he was going through a properly recognised training.

The Marquess of SALISBURY said it was quite true that since this Bill was read a second time very strong representations had been made to the Ministry of Health and the Government in regard to this particular point. It had been represented to them that if the clause passed in its present form it would lead to considerable difficulty in the training both of medical students and pupil midwives, and would really constitute a great disadvantage to the public interest. On the other hand, of course, they had to safeguard the women concerned and they could not agree to any amendment which did not in its terms adequately protect the women. The amendment proposed by Lord Stanmore was designed to steer a middle course between two extremes, and he thought that on the whole he had succeeded. As regarded the words suggested by Lord Knutsford it ought to be considered between now and the report stage whether they were necessary. He thought Lord Stanmore's amendment was required. They did not want to interfere with the great schools of medical training; that was a matter of national importance. It was a tremendous charity which these women were receiving, because they were attended by the medical students and pupil midwives for nothing. He understood that no medical student would be allowed to act in these cases except towards the end of his training. In other words, the medical student was almost a qualified doctor before he was allowed to attend midwifery cases. The pupil midwife was not allowed to attend them except in the presence of a trained midwife, who showed her how to do her work. Therefore he thought their lordships might be assured that adequate care was taken.

Lord DAWSON said that the remarks of Lord Salisbury as to whether the public were adequately protected in the course of medical education were of considerable public interest. It was very important that the public should be reassured on that point. The public were adequately *protected for this reason. To begin with, the medical student* when he started his training had been through several years of preliminary education. He had been trained in the basic sciences on which medicine was built. That was one advantage he had over the midwife. Before he was sent out to practise midwifery he was put through a course of education in the hospital where he was given actual instruction in maternity cases. Having got so far it was very important to send the student out so that he could learn to be self-reliant. One of the most delicate questions in regard to medical education was as to the right moment when the medical student should be sent out to cases on his own, with the right sort of advice in the background. But when he did go out he went with the full knowledge that if the case to which he went was abnormal or any difficulty presented itself he could immediately send for a highly skilled person. It was far better that a medical student should be trained in the habit of self-reliance during his period of education than that he should postpone it until he went into practice and had no one behind him. In actual practice the system worked extremely well. The service was very popular. The patients themselves were attached to the students, largely because they found themselves coming into contact with the innate friendliness which seemed to be part of the make-up of the British medical student. The students, on the other hand, found how closely allied were the human and scientific sides of their art. Altogether it was an excellent arrangement, not only in regard to the training in medicine, but also to the training in the management of people. The patients got very fond of the students and the latter generally ended their week on duty with larger hearts, but certainly with emptier pockets. He had been through this training himself. Before now he had washed a baby and baptized a baby; how efficiently he did not know, but he rather thought he found the baptism more easy than the washing. He thought that the machinery of medical education and the public interest would both be damaged if some sort of amendment as that proposed by Lord Stanmore was not inserted in the Bill.

The amendment was agreed to, and Clause 1 as amended was added to the Bill.

Lord STRACHIE moved to leave out Subsection (1) of Clause 2, which provides that where a midwife has been suspended from practice in order to prevent the spread of infection she shall, if she was not herself in default, be entitled to recover from the local supervising authority such amount by way of compensation for loss of practice as is reasonable in the circumstances of the case. He said that he moved the amendment at the request of the County Councils' Association. So far as they were aware there had never been any injustice done in regard to this matter. Sir Kingsley Wood, the Parliamentary Secretary to the Ministry of Health, had defended this clause, because he said that one or two authorities in the past had not acted fairly to the midwives who were suspended. He (Lord Strachie) thought that it would have been more reasonable if Sir K. Wood had taken the trouble to inform the Committee who these local authorities were and of the circumstances of the particular cases to which he referred. If there were only one or two cases he did not think this clause was necessary.

The MARQUESS OF SALISBURY said it was vital to remember that if there was the least temptation on the part of those concerned to conceal possible contact with infection, grave risks would arise. Although he was a very great advocate of local government independence the Government were more concerned with the safety of the patients and were very anxious to go the whole length they could in order to protect them. Lord Strachie had truly said that the great body of county councils would act with due regard to the interests of their patients and in a proper public spirit in matters of this kind. The Government wished to reassure the midwives themselves; to make them certain that they would get compensation, in ensuring that they would run no risk of carrying infection into the homes of the patients and thereby risking their lives. For that reason he hoped the amendment would not be pressed.

Lord STRACHIE withdrew the amendment.

In Part III. of the Bill, Clause 11 interprets the expressions used. It is defined that the expression "Maternity home" shall not include "any hospital or other premise for the conduct of which a duly qualified medical practitioner resident therein is responsible."

The ARCHBISHOP OF CANTERBURY moved an amendment providing that there should be lodged with the local supervising authority a *certificate signed by two duly qualified* medical practitioners, practising or residing in the county, not being in partnership with the first-mentioned practitioner, or each other, and having no financial or other interest in the hospital, to the effect that the premises and their equipment were in all respects suitable for the purpose, and that the medical practitioner carrying on or proposing to carry on such a hospital was a fit and proper person to carry *it on. He said that the clause, as it stood, practically said* that any man who had attained due qualification in medical work was to be exempted from inspection if he opened a home for the purposes referred to in the Bill. He yielded to no one in his whole-hearted admiration for the medical profession. No profession in the world stood higher in regard to the character of its members and in regard to their public spirit and desire in all cases—and their qualification *in almost all cases*—to act in the public interest and to do what was right. But even in that great profession there might here and there be a man who, while possessing the technical qualifications, could not be regarded as altogether relieved from the possible suspicion of having other motives in what he might be endeavouring to do. In order to protect the homes, the medical men, and the public there ought to be some qualification of the complete exemption which was offered to a man who might be opening a home, dealing with this delicate and difficult matter, entirely on his own responsibility. He had taken the wording of the proposed safeguard from the General Purposes Act of the London County Council (which body had the same matter to deal with), which laid down the restrictions in its case.

Lord BANBURY supported the amendment. It was absolutely necessary that there should be some safeguard to prevent a person starting a home of this sort merely in order to make money out of it. Such a person perhaps might be not properly qualified, or might not have been a success as a medical practitioner. He was not quite certain that all nursing homes were what they should be.

The MARQUESS OF SALISBURY said that there was no difference of opinion between the Government and the Archbishop of Canterbury as to the absolute necessity *of some such* limitation of the clause. Undoubtedly what Lord Banbury had said was true—that there were a certain number of maternity homes which were anything but admirable places; in fact, very disreputable. The only real question was what form the amendment should take. There was a good deal to be said for the Archbishop's proposal, but the method of trying to effect a safeguard by a definition and by a certificate of other medical practitioners was not a wholly *satisfactory* way of meeting the difficulty. The suggestion, of course, was that there were a certain number of black sheep in the medical profession who might misconduct a maternity home. The number might be very small out of all the medical men in the country, but it would certainly not be impossible for one black sheep to find two other black sheep. That was really the only protection which the Archbishop's proposal gave. No doubt they must not be technically in partnership with the medical practitioner himself; but there were all sorts of indirect methods by which evasion could be carried out. The Government therefore thought the object in view would be better achieved by a safeguard of a totally different kind. Instead of trying to fortify one medical practitioner by two others, they suggested that it should be made a matter of discretion by the supervising authority. They proposed that the supervising authority should have absolute discretion to say that they would not certify a particular home, and in that way, through having local knowledge, they would be able to protect the public and the women concerned. That was to say, only those would be exempted from the provisions of Part II. of the Bill who got an exemption from the local supervising authority, leaving it open to the authority to refuse an exemption when they thought fit. That would be the only really efficient safeguard. It might be said that to leave the discretion wholly in the hands of the supervising authority was going too far. The Government agreed with that view, and they were providing an appeal in order to prevent any possible injustice following upon this amendment.

Viscount HALDANE said that on the whole he preferred the Government amendment, and he thought the House should adopt it.

Lord MERRIVALE said that the proposal of Lord Salisbury was much more stringent than that of the Archbishop of Canterbury. He supposed that the local supervising authority would not see fit to exempt anyone from the operation of the general law unless they were satisfied that they ought to be so exempted.

The ARCHBISHOP OF CANTERBURY said that after what had been said he would withdraw his amendment provided that he might bring it up again on the report stage if he found it to be necessary.

The Archbishop of Canterbury's amendment was by leave withdrawn.

Amendments to Clause 11 were moved by Lord SALISBURY providing (1) that any hospital or other premises, for the conduct of which a duly qualified medical practitioner resident therein was responsible, might be exempted from the provisions of Part II. of the Act by the local supervising authority; and (2) that any person who was aggrieved by the refusal of such authority to grant exemption, or by the withdrawal of exemption might appeal to the Minister of Health, who might give such directions to the local authority as he thought proper.

Viscount KNUTSFORD said that if the Bill passed in its present form any hospital or other premises maintained or controlled by a Government department or local authority or by any other body of persons constituted by special Act of Parliament, or incorporated by Royal Charter would be exempted from registration. Hospitals under a Government department or a local authority needed inspection rather more than others. He once saw a Poor-law infirmary in Great Britain where there were 800 patients, 200 of whom were very seriously ill indeed. There was a resident medical officer who was responsible for the management, and therefore that hospital would be exempted from this Act. There was a filthy syphilis ward, and only one medical officer who had to do all the post-mortems and attend the delivery of women. She was a girl 26 years of age, holding her first appointment. When he exposed this case he was called a liar. The City Fathers denied that such a thing ever existed, but he was glad to say that they had to admit it in the end and the conditions were altered. That was an instance where inspection by the supervising authority would have done infinite good. So far as the voluntary hospitals were concerned the more they were inspected the more those who were responsible for them would be pleased. He hoped the Government would agree to take out the provision exempting these institutions from registration and inspection.

The Marquess of SALISBURY said that Lord Knutsford would like to see all hospitals brought within the restrictive provisions of the Bill. That was a view which, coming from him, one was bound to treat with very great respect, but his (Lord Salisbury's) impression was that the great body of hospitals did not quite share the noble lord's opinion. What the Government had to consider was how far they could carry exemption safely, and the clause together with the amendments had been drawn so as to cover the ground as well as possible.

Lord Salisbury's amendments were agreed to and Clause 11 was added to the Bill.

The Bill passed through Committee and was reported to the House.

## HOUSE OF COMMONS.

### THURSDAY, JUNE 3RD.

### *Progress in Housing Construction.*

Mr. TREVELYAN THOMSON asked the Minister of Health the number of houses at present sanctioned for construction under the various Housing Acts, and similar figures for a year ago.—Mr. NEVILLE CHAMBERLAIN replied: Up to the end of May, 1926, 292,067 houses had been authorised for erection under the Housing Act of 1923 and 126,138 under the Act of 1924. The corresponding figures for May, 1925, were 205,030 and 58,350 respectively.

### *Economy in Poor-law Relief.*

Mr. CONNOLLY asked the Minister of Health why he had intimated to the Newcastle board of guardians that any further loans required by them and sanctioned by him would be contingent on their acceptance of the suggestions contained in Ministry of Health Circular 703, which placed the maximum amount of relief at 35s. per week; whether he was aware that this circular stated that the instructions concerned the general stoppage of industry, which no longer existed; and whether he proposed to give the House an opportunity of discussing the effects of such provisions on the health of the Poor-law relief recipients, and particularly the children.—Mr. NEVILLE CHAMBERLAIN replied: It has already been necessary to sanction the raising by this board of guardians of temporary loans to the amount of £200,000, and, in view of their financial position, it is essential that every practicable economy should be adopted. The reduced scales of relief now in force are still higher than has been found necessary in a number of other unions. The basis of Circular 703, which is incorrectly described by the hon. Member, was that guardians should make adequate arrangements for carrying out their statutory duty of relieving destitution while taking all possible steps to conserve their financial resources in view of the demands that might be made upon them. The principles of the circular will continue to be applicable during the coal dispute which must result in increasing demands upon the guardians. The question of discussion in this House is one for arrangement through the usual channels.

### *Report of the Lunacy Commission.*

Sir CHARLES OMAN asked the Minister of Health when the Report of the Royal Commission on Lunacy could be laid before the House.—Sir W. JOYNSON-HICKS (Home Secretary) replied: I am unable to state the date on which this report will be laid before the House, but I understand that the Royal Commission hope to be in a position to present their report before the end of next month.

### FRIDAY, JUNE 4TH.

### *Lead Paint Poisoning.*

On the order for the second reading of the Lead Paint (Protection against Poisoning) Bill,

Sir W. JOYNSON-HICKS (Home Secretary) said that two proposals were made at Geneva for dealing with the evil of lead paint poisoning. One was that the use of lead paint should be prohibited altogether, and the other that every effort should be made by regulation to minimise the danger arising from its use. There was a very great demand for the use of lead paint, and the employers who used it told him quite clearly that the substitutes that had been suggested were not satisfactory. He was not prepared at present to go the whole length of prohibition, because it had not been proved to his satisfaction that it was necessary. But he was prepared to give the Labour Party the half-loaf of regulation, and the choice that day lay not between half a loaf or a whole loaf, but between half a loaf and no bread at all. The regulations contemplated by this Bill had been agreed to by employers and employees, and they would enable substitutes to be used in order to reduce—he would not put it higher than that—the possibility of poisoning by lead paint. He was not going to say that this was final; it was an experimental measure. He was as determined as anyone on the Opposition side of the House to do all he could to reduce the evils of lead poisoning, and if he found that the regulations were not sufficient, and that lead poisoning still went on, he would not hesitate to come to the House again for a Bill which would prohibit the use of lead paint. He had great hopes that the effect of the regulations would be, if not to stamp out the evil completely, very largely to reduce it, and to make the conditions of the workers better, happier, and far less dangerous than they had been in the past.

Mr. R. J. DAVIES, speaking on behalf of the Labour Party, pointed out that the Bill did not ratify the Convention passed at Geneva, and contended that it was grossly unfair for the Home Secretary to ask the House to pass a Bill which in no way met the demands of that Convention. No votes had been cast against the Convention at Geneva, and there had been only one abstention. In 1924 the Labour Government produced a Bill embodying the Convention. The master painters and the operatives were at one in favour of ratification, which was more important in view of the increased number of men suffering from lead paint poisoning. In 1919 the total number of sufferers in this country was 207; in 1922 the number was 246; in 1923 it was 337; and in 1924 it had increased to 486. If this Bill was carried the Home Office would be unable to enforce the regulations. There were about 70,000 house painters and decorators in the country, and they were employed in twos and threes in different houses. How was it possible in these circumstances to enforce the proposed regulations?

Sir W. JOYNSON-HICKS said it was proposed to increase the number of inspectors, and it was his experience that trade-unions quickly warned their members of the existence of new regulations, and that the men soon reported breaches to their unions.

Mr. DAVIES said that the Home Secretary was too sanguine. If the Office of Works, the chief painting department of the State, dispensed with white lead in paints he saw no reason why its use should not be prohibited throughout the country.

Lord H. CAVENDISH-BENTINCK, a Unionist Member, said that the regulations that were proposed would not only be useless, but would prejudice the onward progress of reform. How long were they to wait, and how many people were to have their health ruined while the Home Secretary was waiting? He was more annoyed than he could say that a Conservative Government should have brought in such a rotten and useless measure.

Mr. VIANT, in moving the rejection of the Bill, said he was speaking from experience as a man associated with the trade. When a painter caught the disease it was often transferred by him to his wife and children. Adequate substitutes existed for lead paint, and its use in interior work was quite unnecessary. One of the regulations provided that before a painter got employment he must show a clean bill of health. That would impose upon the painter and his family the taint of pauperism unless it was accomplished by the payment of financial assistance while the painter was unemployed. Factory inspection to-day was a farce, and if the regulations proposed were practicable they would also be a farce.

After further discussion,

Captain HACKING (Under-Secretary to the Home Office) said it must be remembered that since the Geneva Convention the position had been very largely modified, and procedure by regulation had become more practicable because of the inventions that had taken place, and one of the most important was the invention of waterproof sandpaper.

The second reading of the Bill was carried by 131 votes to 56—majority 75.

### MONDAY, JUNE 7TH.

### *The Taxation of Medicines.*

The House went into Committee on the Finance Bill, Mr. J. HOPE, Chairman of Committees, in the chair.

Clause 2 provides that the additional duties of excise imposed by Section 11 of the Finance (No. 2) Act, 1915, upon medicines liable to duty shall continue to be charged, levied, and paid until August 1st, 1927.

Captain WEDGWOOD BENN asked the Financial Secretary of the Treasury to look into this clause which, he said, dealt with matters going back to the seventeenth century. It would be much simpler from the point of view of the taxpayer if the Treasury would produce a clause showing what would be levied instead of referring in the clause to another Act, and then by that to another Act, and so on back to nearly the year 1600.

Mr. R. MCNEILL (Financial Secretary to the Treasury) said that when Captain Wedgwood Benn raised this matter last year his predecessor gave an undertaking that the matter would be considered before the introduction of the present Finance Bill with a view to a codification of the various old statutes. After consideration it had been decided that codification by itself would be useless. What was needed was a drastic revision of the statutes. That, however, had not been possible before the introduction of the present Finance Bill, but it was intended in the near future to appoint an interdepartmental committee to consider exactly what ought to be done in order to get rid of the superfluity of old and obsolete statutes dealing with particular specifics. There was one particular specific in the schedule called the Elixir of Longevity. He did not think that elixir had succeeded in achieving longevity although it had remained in the schedule to the Statute of 1812. He understood that the elixir was no longer efficacious and that showed that mere codification would not meet the case. He hoped that before this time next year they would have done something to remedy the present state of things in this respect.

The clause was agreed to.

### *Health Conditions on Emigrant Ships.*

Colonel DAY asked the Secretary of State for Dominion Affairs if he was aware that the Shaw, Savill, and Albion Company's steamer *Tainui*, which sailed for New Zealand on Jan. 8th, 1926, with 428 third-class passengers, was not adapted or suitable for use as an emigrant ship; that the temporary four- and six-berth cabins were not adequately ventilated; that the bathing and washing arrangements for both men and women were inadequate; and that no water was available in the cabins four days after leaving England; and, in view of these discomforts and the danger to health experienced by these emigrants, would he, in conjunction with the New Zealand authorities, cause full inquiry to be held in this regard.—Sir BURTON CHADWICK (Parliamentary Secretary to the Board of Trade) replied: The *Tainui* was built under Passenger Certificate Survey in 1908, and has since, with the exception of the war period, been engaged in carrying emigrants to New Zealand. Before leaving this country on her last outward voyage, she was surveyed by Board of Trade surveyors, when the ventilation, bathing, and washing arrangements were found to be in excess of the requirements of the regulations. The ship has been again inspected by the Board's surveyors, and they report that the officers and stewards of the ship state that they received no complaint of lack of water in the cabins. The stewards state that the supply tanks were filled regularly each morning from a fresh-water tap fitted in each section of the passenger accommodation.

### *Government Nominee on the G.M.C.*

Mr. FORREST asked the Vice-Chamberlain of the Household, as representing the Lord President of the Council, whether the Crown nominee on the General Medical Council would make any annual report to the Government on its proceedings; and whether, in that case, the document would be published.—Major HENNESSY replied: The hon. Member appears to be under some misapprehension. The meetings of the General Medical Council are open to the public and are reported in the daily press and professional journals. The official minutes of the proceedings are published and are supplied to the Privy Council, and are also available to the public.

Mr. HORE-BELISHA asked whether Mr. Hilton Young would answer questions in the House of Commons concerning the General Medical Council.—Major HENNESSY replied that he was afraid he could not answer that without notice.

### TUESDAY, JUNE 8TH.

### *Crown Nominees on the General Medical Council.*

Viscount SANDON asked the Vice-Chamberlain of the Household, as representing the Lord President of the Council, whether, seeing that the Lord President controlled a large number of nominations to the General Medical Council, he would nominate at once, or at the earliest possible moment, a number of non-professional persons, in view of the fact that the one just appointed could not possibly fill his rôle adequately if alone amongst 37 other medical members.—Major HENNESSY replied: The Crown nominees to the General Medical Council are five in number and nominations can only be made under the statute when vacancies occur.

Viscount SANDON asked the Vice-Chamberlain of the Household, as representing the Lord President of the Council, whether the Lord President's nominations to the General Medical Council were made for life, or on what basis.—Major HENNESSY replied: The nominations of His Majesty, on the advice of his Privy Council, to the General Medical Council are made for five years under the Medical Acts.

## ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee 40 cases were considered and £507 voted to 31 applicants. The following are notes on some of the cases relieved:—

Widow, aged 70, of M.R.C.S. Eng. who practised in Wiltshire and died in 1896. She has worked hard for the last 30 years, and has kept and educated her three children who are now only able to maintain themselves. Applicant has been living with her sister aged 80, but on account of her great age cannot nurse the applicant who has been removed to a nursing home. Only income £98 per annum, and the Fund has been asked to help with the nursing home fees which amount to 2 guineas a week. Voted £6 in three monthly instalments of £2 each.

L.R.C.P. & S., aged 69, who practised in Scotland until ill health obliged him to sell his practice. Is now suffering from cerebral hæmorrhage and paralysis. Friends have applied to the Fund for assistance to meet expenses otherwise the doctor will have to go to the workhouse. The Hutcheson Charity is also being approached with a view to obtaining some additional assistance. Voted £40 in 12 monthly instalments.

Widow, aged 65, of M.D. Glasg. who practised in the north of Scotland and died in 1903. Two daughters, aged 24 and 22; the eldest is at home, and her only income is £30 per annum, the youngest has just passed her exams., and is now self-supporting. Since 1917 the applicant and her daughters have been fortunate in having a cottage at a nominal rent of £5 per annum, but the farm has now new tenants and the cottage is to be vacated which will involve the applicant in a heavier rent in future. Voted £10.

Widow, aged 47, of M.D. who practised in London and has been an inmate of a mental hospital since 1909. Applicant and son went out to Canada in 1923 and worked on a farm; the son also studied and passed his matriculation and was awarded a scholarship for four years, but was unable to make use of it as towards the end of that year (1924), owing to his eagerness to earn additional money; the physical and mental strain brought on heart trouble which has completely disabled him, and he is now in bed. The applicant is also in very poor health and application for assistance was made to the Fund to help them under these pitiable circumstances. Only income £150 per annum. Voted £10.

Widow, aged 49, of M.B. Edin. who practised in Wales and died in March. Two sons, aged 20 and 16; eldest a journalist earning £120 per annum, and the youngest is at present living with friends. Applicant hopes to get the youngest boy out to Australia. It is estimated that there will be very little left from the husband's estate when everything is settled. Applicant will have to take a post and become self-supporting. Voted £15 in three monthly instalments of £5 each.

M.D. 1880, aged 72, who practised in London but has had to give up practising on account of bad eyesight. His four children help as much as they can, but the brunt of the household expenses falls on the daughter, which leaves insufficient for her own personal needs. Voted £40 in four quarterly instalments of £10 each.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., at 11, Chandos-street, Cavendish-square, London, W. 1.

East End of London. In Northumberland and Durham the bulk of the working classes live in homes of two or three rooms, whereas in the rest of England and Wales a similar population lives in homes of three or four rooms.

Of course, the free colliery house, or indeed any kind of colliery house, is not the only factor in the causation of this exceptional and deplorable state of affairs. A shipbuilding town like Jarrow shows an even higher percentage of overcrowded persons. But it is the opinion of many who know the two counties well that the free colliery house did much in the past to set the standard of housing; and when the shipbuilding towns grew up, they grew up in areas where one or two rooms were considered good enough for a working-class family. If the set purpose had been to check ambition for better homes, no better way could have been devised to achieve that end than the free colliery house system. A family, which might have struggled and sacrificed in other circumstances to obtain something better, would obviously not do so whilst a home of a kind could be had for nothing, and was indeed part of the wage. The colliery owners on their side had little incentive to build well, and some real difficulties; much coal-mining has been of a speculative nature and leases were often for 21 years only, so that there was a considerable risk of losing capital sunk in building schemes. The more credit is due to those exceptional colliery companies which have built model villages against which no serious criticism can be levelled.

Whilst the homes of Northumberland and Durham are exceptionally small the families are exceptionally large. The birth-rate in Durham, whilst falling as elsewhere, is roughly 50 per cent. above the birth-rate for England and Wales as a whole. On the north side of the Tyne the birth-rate is not quite so high, but it is well above the average for the country. Marriages are early; in Durham, a few years ago, one bride in four was under age. With regard to overcrowding and a high birth-rate, there is almost certainly a circle of cause and effect; young men and young women are glad to escape as soon as possible to make a fresh home, and there are other obvious ways in which overcrowding operates. In Northumberland and Durham there is the further unfortunate feature that over most of the area the sanitary arrangements are bad. Even Gateshead, with its 130,000 inhabitants, is only now converting to water-carriage, and in most of the Tyneside towns, as well as in the Hinterland, a considerable number of ash privies or of pails will be found. Naturally there is a high infantile mortality. The actual figures are rather better than might have been supposed, perhaps because of the energy of the public health officials, but the infantile mortality rate for the county of Durham has been for the last 20 years between 12 and 20 per 1000 above that of the country as a whole.

If it should happen, as seems very likely for economic reasons, that there should take place a closing of pits on a large scale and a migration of miners to other areas, there will be a great deal of suffering in the process and anything possible should be done to mitigate it. But it would not be without compensation. It would mean the thinning out of the most overcrowded homes in England and Wales, and there would be for thousands of families a compulsory break with a bad tradition. The newer coalfields are not cursed with the free colliery house and with the deplorably low standards with which the north-east corner of England is infected.

### THE SOUTH WALES COALFIELD.

The South Wales coalfield is not so old as some of the others (e.g., South Staffordshire and Northumberland), and the housing conditions are proportionately more modern. The coalfield is broken up into a series of narrow valleys, on the sides of which the miners' dwellings are built in ascending rows. During the winter months the hills keep any sun there is from gaining access to the valleys, while the steepness of the banks upon which the houses are built militates against the provision of recreation facilities. Nevertheless, in recent years much is being done through the grants provided by the Miners' Welfare Fund to improve this latter position.

When the health of this community is examined, it is found to have been in recent years more favourable than might have been anticipated. The mining community form with their dependents at least three-quarters of the total population of the county of Glamorgan. The birth-rate of the county, which was 31·0 in 1914, declined to 23·1 in 1919, and after a rise in the post-war years fell again to 21·8 in 1925; these rates have been throughout higher than those for England and Wales, for which the birth-rate was 23·8 in 1914 and 18·3 in 1925. The general death-rate has consistently, since 1912, been lower than that for England and Wales; it was 13·5 in 1914, 11·7 in 1919, and 11·2 in 1925; the corresponding rates for England and Wales were 14·0, 13·8, and 12·2. Infant mortality is usually considered a delicate index to the health of a community, and is of particular interest for a community like the coal-miners, who have always exhibited a high birth-rate. In 1904 the mortality for the county was 170 as compared with 140 for the Kingdom. In 1918 it had fallen to 95, when it was actually below that, 97, for the Kingdom; in 1925 it was 83 as compared with 75. Taken as a whole these mortality records must be considered as favourable for a coal-mining population. A further point throws some light upon the sanitary state of the buildings, of which the prevalence of enteric fever is held to be some indication; in 1901 the death-rate from this disease was 0·39 for Glamorgan as compared with 0·23 for the Kingdom—it had fallen by 1925 to 0·01 as compared with 0·006.

At the present moment relief coming from either public resources, such as the feeding of school-children, unemployment benefit, or from such sources as strike pay and private contributions, place any industrial community, temporarily thrown upon its own resources owing to cessation of work, in a better position than it would have been 20 years ago. The systematic feeding of school-children was instituted in the county, the Whitsuntide holiday being suspended so as to permit provision of meals to continue without a break. The mining community is suffering undoubted privations, a position which reacts promptly on the small purveyors.

## LEBANON HOSPITAL FOR MENTAL DISEASES.

THIS hospital is the only one of its kind in the Near East. For the last 17 years Dr. H. Watson-Smith has been director and throughout the war he was able to carry on the work steadily, though virtually a prisoner in the hands of the Turks. Since then the buildings have been repaired and the work developed. During the past year 135 patients (83 men and 52 women) were admitted. From the previous year there remained 95 patients (48 men and 47 women), making a total of 230 patients (131 men and 99 women) under care and treatment throughout the year. Of this number 33 (16 men and 17 women) were discharged completely recovered and enjoying full mental health. Thirty-seven patients (25 men and 12 women) were discharged improved, although the nature of their malady renders it possible that they may relapse in the future. Fifteen men and 3 women were discharged as not improved, several of these being removed by impatient relatives against medical advice Primitive methods of treatment in the form of exorcism are still much in use.

At the twenty-seventh annual meeting of the hospital held at the rooms of the Medical Society of London on June 1st, the chairman of the General Committee, Dr. E. W. G. Masterman, presided. He had recently visited the hospital, and he said that boring to a depth of another 300 feet, where an ample constant supply of water would be available, was vital to the well-being of the community. The number of acute women patients was increasing, and single room accommodation for these was becoming pressing. Such cases were unlikely to decrease during the present troublous times in Syria. The payments of the French Government for necessitous cases had fallen in value with the fall of the franc. Dr. Masterman paid a tribute to the valuable work of the executive committee in Beyrout.

Mr. W. A. Albright, J.P., one of the trustees, who had also lately visited the hospital, said that far more facilities for curative open-air occupation would be opened out when the land could be irrigated and brought under cultivation. Mr. F. Hourani spoke of the great service of the hospital to the Syrian nation and hoped that in course of time Syrians would take the burden of the work upon their own shoulders. Dr. J. F. Whitwell presented the report of the medical director, which includes statistical tables showing the prevalent forms of mental disorder in the East. Dr. Fortescue Fox referred to Asfuriyeh as a centre of treatment, of teaching, and of research. The resident fifth-year students to be supported by the Rockefeller Foundation would be of assistance to the Director in his work as clinical professor of psychiatry in the American University of Beyrout. Dr. Fox looked forward with confidence to further light being shed from this centre upon the difficult problems associated with mental disease. Mr. Joseph Butler, senior honorary treasurer, stated that over £4000 a year was contributed in Syria itself on behalf of patients. Dr. Percy Smith mentioned that it was at Bethlem Hospital that the general committee first met. Dr. Bedford Pierce moved a vote of thanks to auxiliary committees in America, Switzerland, and Holland.

Copies of the report can be obtained from the general secretary, Miss Hilda Fox, 67, High-street, Marylebone, W.1.

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DONATIONS AND BEQUESTS.—Under the will of the late Mr. Milton Haydock, of Churchfield House, Great Harwood, Lancs, the testator left £2000 to the Blackburn and East Lancs Royal Infirmary.

# A Lecture
ON
# FREUDIAN PSYCHOLOGY.

*Delivered at the Institute of Pathology and Research, St. Mary's Hospital, on June 3rd, 1926,*

BY CHARLES S. MYERS, M.D.,
SC.D. CAMB., F.R.S.,
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WHEN I was asked to give an address on the scientific value of Sigmund Freud's contributions to psychology I recognised at once the impossibility of dealing adequately with the subject—in the first place within the compass of an hour's lecture, and secondly without having familiarised myself with the numerous accretions and modifications to which in recent years Freud has been subjecting his earlier views. The latter of these difficulties I have endeavoured to remove, so far as I could. The former will inevitably prevent me from entering into many, I hope less important, details of the subject.

### THE "ALL-OR-NONE" ATTITUDE TOWARDS FREUD.

I accepted the invitation from selfish and unselfish motives. On the one hand, I had long wanted to form for myself a more exact judgment of the value of Freud's teachings. On the other hand, I recognised that few had ever made this attempt in any spirit of impartiality or after adequate training in normal psychology. The reaction of nearly all of Freud's followers and opponents has been an emotional one—an "all-or-none" response. Either nothing could be right or nothing could be wrong, within the vast psychological structure which Freud has erected. Such an attitude is the natural result of the play of lower uncritical levels. Few physicians have had the psychological training to view Freud critically. Medical education is still apparently based on the supposition that only material processes in the living organism are worth studying and that normal psychology and psycho-physical methods have nothing to teach, as if mind did not exist and were of no therapeutic value for general medicine.

### FREUD'S OWN CONFLICTS.

Freud himself is not a trained psychologist. Had he been, it is quite possible that his developing genius would have been so stunted by the (now superseded) psychological doctrines of his day, that his brilliant contributions to the subject—of such varying worth—would have been altogether denied to us. Contempt is often nature's cloak for ignorance, but it is not altogether unjustifiable, because of the errors of its youth, that Freud despises or ignores current psychology. Of him the psychologist might say what Dostoievsky, so I have read, once said of himself: "I am called a psychologist. It is wrong. I am simply a realist in the higher sense of the word; that is, I depict all the dim recesses of the human soul." Unfortunately, the untrained psychologist is only too easy a prey to the *prime psychological fallacy*—that what he finds in his own mind he assumes to exist in the minds of all others. I suspect that Freud is too often unwittingly depicting 'the dim recesses of his own soul," within which affection so clearly conflicts with enmity, generosity with despotism, inferiority with ambition, and the volatile, volcanic temperament of the artist with the conscientiousness of the man of science.

For Freud has himself stated that throughout his life he has always found the emotional need both for "an intimate friend and a hated enemy,"[1] whether in different persons or in the same person at different times. A few years ago I sent a young pupil to see Freud, who reported to me that when he remarked to Freud that he had just met one of the most distinguished men—let us call him X—who had seceded from the Freudian school, Freud declared himself totally ignorant of X, insisting "Ich kenne ihn nicht." Freud's father, it is on record, told a friend that his little Sigmund would never dare to contradict him. As a boy, and no doubt later, he was subject to all the indignities and contempt inseparable from an anti-semitic atmosphere. In my experience a lack of mental balance is notable, too, among Freud's followers, both among his lieutenants and in the rank and file. At least three suicides are on record within the narrow range of Freud's own psycho-analytic circle in Vienna.[2]

### HIS PSYCHO-ANALYTIC SCHOOL.

We have to remember that no one can be considered a true psycho-analyst unless he has himself submitted to psycho-analysis, that such psycho-analysis must be conducted by Freud or by one of his more or less immediate lieutenants, and that the process of psycho-analysis necessarily involves what is technically known as "transference," in which certain peculiar relations between the analyst and his subject develop, that invite uncritical acceptance of his views. To these relations I shall return presently.

Freud has thus founded a "school" of which he is the despotic, infallible, quasi-papal head; and to be an apostle of it thus involves the laying-on of hands. As leader of the school he has been compared to the leader of a herd who drives out any members who attempt to usurp his authority. This attitude his enemies ascribe to ambition and intolerance, his devotees to the necessity of protecting his teachings from all risk of charlatanry and pollution. It is not surprising, and certainly not altogether blameworthy, if in framing the many later additions to and modifications of his original views, Freud has at times adopted attitudes closely similar to those which he originally condemned in those of his pupils who were forced to part company with him. These accretions have been of late so numerous and sometimes so much at variance with his previous views that it becomes difficult to criticise some of them in close detail. Six years ago Freud wrote: "I might be asked whether I am myself convinced of the views here set forward, and if so how far. My answer would be that I am neither convinced myself, nor am I seeking to arouse conviction in others. More accurately, I do not know how far I believe in them."[3]

### PSYCHO-ANALYSIS AND HYPNOSIS.

But the airy way in which Freud treats such hypotheses as mere embellishments of decorative value cannot apply to the theory and practice of psycho-analysis. This forms the foundation-stone for all his later superstructure. It arose, as is well known, from Breuer's discovery that cures were possible in psychoneurotics by bringing back to consciousness their repressed memories through the influence of persuasion under hypnosis. Breuer believed that an essential factor in such cures was the release of a hitherto repressed emotional experience—the "ab-reaction" which accompanied the recovery of these forgotten inhibited memories. This process of psychotherapy was hence called "catharsis." It was employed in the British Army with surprising success on a large number of cases of so-called "shell shock" during the Great War.

But in Freud's hands hypnotic suggestion did not prove uniformly successful. His experience was that hypnosis "conceals the resistance" which the psychotherapist desires to reveal. He contends that "hypnosis does not do away with the resistance but only avoids it, and therefore yields only incomplete information and transitory therapeutic success."[4] That is not, however, the experience of others who used hypnosis as a rapid method of psychological analysis during the recent war. The hypnotised patient manifested points of resistance where the recovery of lost memories, recent and bygone, proved exceptionally difficult, in much the same way as the non-hypnotised patient; and there was no reason to suppose that the cures brought about by such methods of recovery of repressed experiences were transitory.

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[1] *The Interpretation of Dreams.* English trans. Third edition. 1913. London: G. Allen and Co. P. 385.

[2] Cf. *Sigmund Freud: his Personality, his Teaching, and his School.* By Fritz Wittels. English trans. London: G. Allen and Unwin. 1924. Pp. 60, 68, 247, &c.

[3] *Beyond the Pleasure Principle.* English trans. 1922. London: International Psycho-analytical Press. P. 76.

In Freud's hands the procedure of psycho-analysis has undergone certain developments since its origin, but it is unnecessary to describe these here. Its broad principles have remained unchanged. The hypnotic state and the principle of catharsis are replaced by free association and interpretation. The character of the subject's associations and the interpretations of the analyst are employed to recognise resistances and repressions.

Freud's aim in psycho-analysis was much the same as Breuer's—"making conscious the unconscious, removing the repressions, filling in the gaps in memory."[5] That this aim rather than the "catharsis"—the "abreaction," or release of a suppressed emotion—is generally the correct one there can, I think, be little doubt. What is in dispute is Freud's insistence that psycho-analysis must be carried back to the patient's early memories of from 2 to 5 years of age. This, Freud maintains, is essential for true psycho-analysis. It is essential because of Freud's peculiar views concerning sexual development and the relation of sexual activity to the psychoneuroses. But we must recognise at the outset that other psychotherapists claim equal success in their treatment without extending their analysis so far backwards, and that they are wholly unable to accept Freud's views as to the *invariable* responsibility of infantile sexual conflicts and sexual maldevelopments for the psychoneuroses.

It is noteworthy that Freud's escape from the use of hypnosis may not be so complete as at first sight it appears to be. During Freudian psycho-analysis the patient lies on a couch and is asked "to put himself into a condition of calm self-observation, without trying to think of anything," and then to narrate whatever comes into his mind. But such a state of reverie, bereft so far as possible of self-control, is apt to pass into a condition not far removed from that of slight hypnosis. I have known patients at the close of a period of analysis "pulling themselves together" with a start, just as if they were passing from dreamland to the reality of every-day life. In one case I have actually seen the old personality, as it were, suddenly reappear with total oblivion once more of the suppressed memories which I had been reviving during the analysis.

### *Transference.*

As has already been mentioned, psycho-analysis does not merely consist in voluntary passive confession. The analyst is ever on the alert to recognise resistances, to interpret and to remove them, and to explain to the patient what his repressions and their distortions mean. In one description of the process of psycho-analysis I remember reading how, while the patient—of the gentler sex—is lying in a darkened room, the analyst's hand is smoothing her troubled brow, as long-repressed memories are revived and interpreted.[6] I do not wish it to be supposed that such are the usual conditions under which psycho-analysis is conducted, but psycho-analysis in the Freudian sense does involve—and it is, according to Freud, essential for success that it should involve—a very special and intimate relation between the analyst and his patient, to which he gives the name of "transference." Freud gives the following examples of this relation as described to him by the patient's friends: "He has quite lost his head over you; he puts implicit trust in you; everything you say is like a revelation to him. . . . It is positively boring the way he never speaks of anything but you; he quotes you all the time."[7] This transference, like all suggestibility according to Freud, depends on sexual attachment. In the psychoneuroses it means (in Freudian language) the gathering together of the whole of the sexual energy which has hitherto been withdrawn from the control of the ego and become attached to the symptoms, and the transfer of that energy to the analyst. Without such transference, says Freud, "the physician and his arguments would never even be listened to."[8] It "exists in the patient from the beginning of the treatment and is for a time the strongest impetus in the work"[9] of psycho-analysis. Sometimes the transference is a negative one, a feeling of hostility towards the analyst; but it is clear that such a relation cannot make for a successful issue. Women patients, we are told by Freud, fall in love with the analyst; men patients (by homosexual sublimation, he supposes) admire him. Having won this transference the analyst's great care, we are told, is to re-direct it, so as not to endanger it.

We may well wonder how far psycho-analysis, as practised by Freud, owes its success to the resuscitation of repressed complexes, how far to the peculiar interpretation, almost invariably in terms of sexuality, which he gives his patients, and how far to the extraordinarily suggestive influence which the analyst comes to exert over his patient because of this "transference." Everyone who has practised suggestion as a method of psychotherapy will have met cases of cure where, it later turned out, the patient did not really even understand the explanations given him, but accepted them by force of suggestion, not of comprehension or reason. I recall a case in which a person under light hypnosis carried out various acts to the amusement of a roomful of undergraduates. On being fully awakened, he declared that he was throughout quite aware of the absurd things he had been doing, but did them "to oblige" the hypnotist. Realising the enormous power of suggestion and Freud's stress on transference, can we from the therapeutic success of Freud's psycho-analysis justifiably infer the truth of his interpretations and of his view of the rôle of sexuality in the psychoneuroses? Can we be sure that Freud is justified in his belief that every neurotic is homosexually inclined; that every neurotic shows in his symptoms a substitute for sexual gratification; that most dreams treat of sexual material and give expression to erotic wishes?[10]

### FREUD'S TENDENCIES TO RASH GENERALISATION.

Freud's cardinal error is undue readiness for generalisation. No one will deny the sexual causation of many dreams and neuroses. But he will refuse to admit this as having a general or universal application. So, too—to take another illustration—no one will deny that *some* slips of the tongue are due to the mutual interference of two different intentions. "Is this the explanation of all cases of slips of the tongue?" asks Freud. He replies: "I am very much inclined to think so, because whenever one examines an instance of it this type of solution may be found."[11] Still, it may be, he goes on to say, that a slip of the tongue can occur without the agency of this mechanism. So far, so good. But in later years he succumbs to the temptation of rash generalisation. He maintains ultimately that for the occurrence of *any* slip of the tongue the "suppression of a previous intention to say something is the indispensable condition,"[12] and that "in every case a disturbing group of ideas—a complex—can be brought to light which alters the meaning of the intended speech . . ."[13] No one who has had experience of apraxia and of the effects of perseveration and previous association, particularly in experimental work on memory, could accept such a generalisation. Of course, every slip of the tongue has its "cause"; so, too, has every error of the pen, every act of forgetting—if only it could be ascertained. But they are certainly not all ascribable to a conflict between antagonistic intentions or to disturbing complexes.

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[4] Collected Papers. English trans. London: Hogarth Press. 1924. Vol. I. P. 269.

[5] Introductory Lectures on Psycho-analysis. English trans. London: Allen and Unwin. 1922. P. 363.

[6] Contributions to Psycho-analysis. By S. Ferenczi. English trans. Boston, U.S.A.: The Gorham Press. 1916. P. 46.

[7] Introductory Lectures on Psycho-analysis, p. 367.

[8] Ibid., p. 372. [9] Ibid., p. 370.

[10] The Interpretation of Dreams, p. 240.

[11] Introductory Lectures on Psycho-analysis, pp. 34, 35.

[12] Ibid., p. 52.

[13] Collected Papers, vol. iv., p. 13 ff.

So, again, none will deny that the so-called "Œdipus complex"—in the sense of a special attachment of the child to its parent of opposite sex—exists, but that it is universally present in the development of every individual and can always be appropriately termed "sexual" is sheer generalisation based on totally inadequate evidence and opposed by other competent observers. Freud regards the Œdipus complex as the *most important conflict* which the child has to face. No one except a confessed psycho-analyst is likely to admit this, until adequate evidence obtained by the unprejudiced from a large number of normal children and adults is obtainable.

### HIS VIEWS OF SEXUALITY.

The importance of the study of the abnormal can hardly be over-estimated, but there is always a risk in applying the results of such study to normal persons. When certain neurological processes are disturbed, the result—e.g., the gait in locomotor ataxy—may have no relation to any behaviour or experience in the childhood of the individual or of the race. If certain children find their way, as Freud avers in all children, from suckling to onanism, if in certain persons the kiss may suffice for sexual gratification, if among sexual perverts *other objects and aims become* sexual substitutes, even if, in certain normal people, perverse sexual tendencies may arise when normal sexual satisfaction is prevented, we are not justified in concluding, with Freud, that in every normal person sexual perversion is latent or that what rudiments of sexual life exist in the normal child must necessarily be of a perverted order. Admitting the possibility that under certain conditions vicarious organs may be concerned in sexual gratification, we have no right to conclude that the sexual instinct has a manifold source. If sexual feeling may at times irradiate to the anal region, that does not justify us in including this region among the fundamental origins of sexual feeling.

We may allow that sexual gratification can be regarded in Freudian language as an "organ pleasure"—i.e., as a pleasure derived from the activity of a bodily organ—and we may allow that the infant derives similar organ pleasure from suckling movements in solitude—i.e., in the absence of the mother's breast or milk. But this gives us no right to speak of the infant as enjoying an "oral stage" of sexual development in which its desires are directed, narcissistically, homosexually, and auto-erotically, solely to itself.

Nor are we justified in concluding that the mouth forms part of the apparatus of the sexual instinct, because in sexual perversion it can be employed in arousing the sexual orgasm. As well might the hand be called part of the mechanism of the hunger instinct because it can be employed in satisfying hunger. The mouth may satisfy sexual appetite just as the hand may satisfy the appetite for food. But there is a world of difference between this admission and Freud's ambiguous application of the word "erotogenic" to the oral zone. We have no reason to suppose that in this region the feelings of sexual desire can normally be engendered.

We refuse, then, to follow Freud in his conclusion that because infants perform the movements of suckling "with no other object but that of obtaining pleasure," "we therefore call these areas of the body [mouth and lips] erotogenic zones and describe the pleasure derived from suckling as a *sexual* one."[14] We deny that because the child may have a preponderating affection for the parent of opposite sex, this need develop into jealousy, hatred, and a desire to kill the other parent, or that because, say, a girl child may express a desire to marry its father or its mother, this need imply anything more than a tender desire for close and permanent association with the parent. Affection is not necessarily in any sense sexual, neither in character nor in origin. It is to be found among the members of all higher organisms that live in herds; it is to be found in the tender relations of parents to offspring, not less than in those of offspring to parents. Affection belongs to the protective instinct, and develops both among those who give and among those who receive it, whether that protection relate to the herd, to the individual, or to the species. There are no grounds, then, for concluding that in childhood "an incestuous love-choice is in fact the first and the regular one." Nor can we conclude that when the child "shows at the beginning of life no disgust for excrement," he is passing from the oral to the anal stage, characterised by curiosity and cruelty, or, to use Freudian language, by sexual inspection and sadism.

A similar criticism is applicable to the so-called "castration complex." No one will deny that some young boys, when they see the female genitalia for the first time, may conclude that castration has occurred in the other sex, and that some young girls may arrive at a corresponding conclusion. But does the evidence warrant our supposing that this is a *necessary* belief occurring in all (or even in most) children, modifying an equally universal Œdipus complex, and playing an important part in the mental development of the average normal human being?

### HIS DEFINITION OF INSTINCTS.

Both hunger and sexual feeling are what the psychologist terms "appetites." But for Freud the essence of an instinct is that the stimulus should arise within the organism. Consequently he asserts that hunger and thirst are the *typical* examples of instincts, and that sexual desire is likewise an instinct because it arises from distension of the vesiculæ seminales and the like. Freud divides the instincts into sexual instincts and ego-instincts—the species-preservative and the self-preservative instincts. I will not stop to consider how difficult it is, under this classification and definition, to range such clearly instinctive reactions as fighting, constructiveness, self-display, which with their associated affects are as much concerned in preserving the individual as in preserving his species. Nor will I do more than point out in passing that the apparent opposition between preservation of the individual and preservation of his species is biologically unjustifiable. The two are inevitably inter-dependent, otherwise their respective efficiencies would suffer. Freud is not any happier by his classification of instincts elsewhere into life- and death-instincts, the former making for the preservation of the species, the latter heading for the death and disintegration of the individual, but becoming sublimated, through the agency of the life-instincts, to the "will to power" and cruelty.

Were Freud pressed with the objection that suckling is not a sexual but an ego (or self-preservative) instinct, he would retort (as he has indeed said) that it is only later in the life of the individual that sexual instincts are detached from the self-preservative instincts, as—he would say—the stage of auto-erotism (by which he only means interest in the self) passes to the love of (by which again he means merely interest in) external objects. Elsewhere Freud even suggests that all instincts are qualitatively identical. But such a reduction of instincts to an unknowable common origin is, at best, only of philosophical interest and is surely most improbable.

### THE LIBIDO.

The Freudian doctrines are fundamentally derived *from the supposition* that all "wishes" and "desires," by which is psychologically meant all conative activities, of any importance, are dependent on the exercise of the sexual instincts, and that the energy of the whole mental and nervous system is like a fluid which can be dammed up and drained, now in one direction, now in another. I know of no adequate psychological or neurological evidence in support of this view. Freud employs the term "libido" to designate the force by which the sexual instincts achieve expression. Only the sexual instincts have *libido;* the self-preservative instincts have to be content with ego-*interests*. The libido is never changed, we are told, into ego-interests. Whether, and if so how, the ego derives its activities, save from those of the instincts which it controls, is left unsaid. Sometimes the libido seems to be an innate instinctive force incessantly battling with the ego. Sometimes it is obscurely described as the investment of energy directed by the ego; at others—e.g., in auto-erotism—as inflating the ego with its own energy. Sometimes, as in anxiety, the ego is described as flying from its libido; at others as censoring and blocking the discharge of the libido, which is thus withdrawn to as a subconscious. Sometimes the ego is regarded the great reservoir from which the libido flows out and returns.

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[14] Introductory Lectures on Psycho-analysis, pp 263, 204.

## THE "PLEASURE PRINCIPLE."

Such fantastic creations are by no means the sole components of Freud's superstructure which the psychologist must oppose. His belief that pain is associated with increase of excitation and with the damming up of energy, whereas pleasure is associated with opposite processes, is obviously not in full accordance with the facts. His belief that the infant only responds to the "pleasure-principle" and that only later does it follow the "reality-principle," is equally unacceptable. In the first place, it is untrue to suppose that the primary motive of action is the search for pleasure. Pleasure maintains action and re-establishes a situation; it does not originate action. Secondly, from its very birth the infant is brought to face reality. It cannot suckle just when it likes, it has to submit to the regular routine of toilet, it is put to sleep and awakened at regular hours. There is no stage in its extra-uterine life when it can be said to obey one of the two so-called principles without obedience to the other.

## THE UNCONSCIOUS AND THE SUPER-EGO.

In his justifiable efforts to endow the unconscious with characters different from, and more primitive than, those of the conscious, Freud has practically identified the unconscious with the sexual libido and has urged that both act irrationally merely according to the pleasure principle. Of late, however, he has seen the necessity of withdrawing from this attitude. Contrasting the ego with the "*es*," as he now calls it—i.e., the conscious self with the unconscious—Freud has been forced to posit an ego-ideal or a super-ego; in other words, a moral factor dominating the ego, a voice of conscience above the ego, which exercises the same functions as the unconscious censorship (in the "preconscious") exercises on dreams. He has now come to recognise the existence of an "unconscious conscience"—apparently an unconscious state of the super-ego. Indeed, he supposes that the *es*, or unconscious, is the source of the super-ego, although in the service of the super-ego the ego comes into conflict with the *es* in overcoming the Œdipus complex. He also suggests that the super-ego, or conscience, acquires its characteristics of authority and affection, because it is created by the first relations of the libido of the *es*—namely, towards the two parents—when "introjected" into the ego.

Who but a blind follower, totally untrained in psychology, could adopt such a wild, useless farago of generalisation? Freud sees sex everywhere, and attends to little else. Morality arises from the Œdipus complex; speech is perhaps derived from sexual communication; suggestion is dependent on sexuality; obstinacy, meanness, and orderliness in adult life result from the holding back of stools in infancy; intense burning ambition occurs among those who formerly suffered from enuresis!

## THE ABUSE OF SYMBOLISM.

It is as easy to deny all this *in toto* as to accept it *in toto*. There are few statements of Freud which are wholly untrue. But his lack of psychological training, the need to maintain his position as the head of a school and his own brilliant and erratic personality, combine to make his teachings ridiculous in the sight of all free-minded men. Let us take, as a further instance, Freud's exaggerated reliance on symbolism as a means of interpretation. Who can deny that symbolism often provides a source of escape from, a substitute for, unwelcome ideas? But let us examine the list of symbols given by Freud for the genital organs. For the male organ, the symbols include sticks, umbrellas, poles, trees, knives, daggers, sabres, guns, revolvers, taps, watering-cans, springs, telescopes, nail files, hammers, balloons, aeroplanes, reptiles, fishes, hats and cloaks, machinery, keys. For the female organ, the list comprises pits, hollows, caves, jars, bottles, the mouth, ships, pockets, cupboards, chests, rooms, windows, doors, gates, wood, paper and all other materials, together with objects made therefrom, snails, mussels, churches, apples, peaches, and other fruit, landscape with rocks, gardens, and flowers, jewel cases, and shoes. And these lists are admittedly not complete! With such a vast choice of symbols, what dreams in a normal person, what associations in a case of psychoneurosis cannot be given and assured a sexual significance, when once the analyst has made up his mind to find it?

Is it conceivable that different analysts, laying different stresses on the relative importance of the Œdipus complex, the castration complex, the death instinct, the desire for re-birth, the love of mastery, the play of purposive, prospective functions—all accepted in greater or less degree by the Freudian school of to-day—will independently give the same interpretation to the same dream or symptom? That the interpretation satisfies the dreamer or patient is, I repeat, no proof of its accuracy. A man may be convinced of sin without having actually committed it. Days, weeks, or months of daily intimate intercourse with a psycho-analyst, and the increasing influence and prestige (in Freudian language, transference) which he exercises over his subject will lead the latter to accept any system of explanation as satisfactory and correct.

## THE PLAY OF SUGGESTION AND CONVICTION.

Those who wish to see to what lengths Freud and his followers are prepared to go in bringing such suggestion to play on their subjects should read his published "Analysis of a phobia in a 5-year-old boy."[15] So innocent Freud seems of the dangers of suggestion that he can write: "If I say to you 'Look up at the sky and you will see a balloon,' you will find it much more quickly than if I merely tell you to look up and see whether you can see anything."[16] Freud observes that "an experienced physician does not meet his patients unprepared and, as a rule, asks of them not elucidation but confirmation of his surmises."[17] In other words, the psycho-analyst is so certain of his own interpretation of the patient's revelations that his main task is to convince the latter of the truth of them. "Denial at the beginning," says Freud, "should not mislead the physician; every resistance is finally overcome by firmly insisting on what has been inferred and by emphasising the unshakable nature of one's convictions."[18]

Surely this attitude is the explanation of Freud's earlier insistence that "an infantile history of seduction by adults or other older children" was characteristic of, and chiefly, if not wholly, responsible for subsequent psychoneuroses. A few years later Freud had to admit that many accepted histories of such early seduction were found by him to be purely fictitious and imaginary. Is it not likely that Freud's conviction, based on a few possible real instances, led him to suggest (no doubt quite unconsciously) to his hysterical patients that they had been violated in early life and that these patients had finally accepted the suggestion? But Freud is satisfied with relating such seduction phantasies—as they turn out to be ("memory romances," as he calls them [19])—to the repressed memories of other infantile sexual experiences on which they were founded and to the hysterical symptoms into which these had become transferred.

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[15] Collected Papers, vol. iii., pp. 149–289.
[16] Introductory Lectures on Psycho-analysis, p. 365.
[17] Collected Papers, vol. i., p. 224.
[18] Ibid., p. 228.

Members of the psycho-analytical school are equally subject to suggestion, when it assists their faith in their master To my own knowledge a purely fictitious dream was jokingly related in all seriousness to one of the ablest of Freud's followers. He immediately assumed that it was true and proceeded to interpret it in the light of sexual symbols, just as a servant girl might do by consulting her dream-book. So convinced was he of the truth of the dream and its interpretation that he published it in one of the many able essays he has written in defence of the Freudian position!

Take such a dream as the following, offered by Freud, as an example of symbolic interpretation: "*The dreamer met his sister with two friends who were themselves sisters He shook hands with these two, but not with his sister*" We are told that there was an actual episode connected with this in the dreamer's mind. Left to free association, his thoughts passed (under the influence of how much suggestion we can shrewdly guess!) "to a time when his observations led him to wonder why a girl's breasts are so late in developing The two sisters, therefore, stand for the breasts; he would have liked to grasp them with his hand, if only it had not been his sister."

Or take the following dream: A woman who had been married for ten years dreamed about herself, her husband, a friend of about her own age and her fiancé to whom she had just become engaged Freud interprets this dream to mean regret on the part of the woman for having married so early, had she waited she might have done better. He admits that the dream offered no association justifying this conclusion! "...the dreamer had not been aware that she had such disparaging thoughts about her husband; she did not know why she should so disparage him" But "there occurs to us almost spontaneously," says Freud, "the following [i.e, the above] construction of the latent dream-thoughts for which the manifest dream is a highly-distorted substitute"! Why? Because in the dream "references to time are noticeable at several points"; action is "taken too soon and in too great a hurry." "*Going to the theatre* obviously stands for marriage. *Getting the tickets too soon* is, in fact, a direct substitute for 'marrying too soon,'" because after marriage a woman can see things at the theatre which are forbidden to the unmarried girl! [20]

We need no further illustrations of the fact that the psycho-analyst is so convinced of many of his interpretations that he feels no necessity to consult his subject. He has no hesitation even in revealing the innermost thoughts and unconscious "wishes" in the lives of dead and imaginary characters, Leonardo da Vinci, Hamlet, and others.

## Freud's Contributions to Psychology

Let it not be supposed that Freud's labours have been in vain and that we must reject all his work because we refuse to accept his wild, unfounded generalisations. No one has done more valuable service than he in insisting on the dynamic conception of mental processes and on the importance of early experiences alike in the education of the normal adult, in dreams, and in the neuroses. He has rightly stressed the principles of fixation and regression—i e, arrest during development and return to an earlier phase of development—for the light they throw on many mental disturbances. He has greatly advanced psychotherapy by emphasising the enormous influence of repression and censorship and the importance of symbolism. His analysis of the processes characteristic of the dream are of special value,—his description of how the dream is determined by condensation, displacement, secondary elaboration, regression, opposite meanings, prominence of visual imagery, &c.

Most people would probably credit Freud with definitely establishing the existence of unconscious mental processes He himself finds "incontrovertible proof of the existence" of the unconscious—because, forsooth, psycho analysis "works" and because we need it as an explanation [21] But we must remember that a hypothesis may still remain a hypothesis, however valuable it may be I do not myself see how the existence of unconscious mental processes can ever be *proved*. Some reject the unconscious mind because they regard it as inconceivable But if the notion that it conveys works better than any other, we have as much right to employ it as the physicist has to credit the ether with equally inconceivable characters.

Despite our agreement with Freud in his distinction between "preconscious" and "unconscious" processes, we may justly criticise him for his familiarity with the latter. He claims to know as much about the nature of the unconscious mind as the ordinary religious man claims in regard to the mentality of God. Anthropomorphism in religion is hardly less justifiable than what may be correspondingly termed "egomorphism" in psychology. If nothing is more certain than that the "mental" processes in any existing ultra-human purpose and direction must be quite different from our own, and that it is therefore absurd to speak of God's feelings, wishes and motives in human terms, we must also realise the impossibility of speaking, as Freud does so confidently, of unconscious ideas, unconscious wishes, and the like in terms of consciousness If only Freud had taken the trouble to define more adequately what he meant by wishes, by ideas, and indeed by sexuality, instinct, anxiety, love, and other terms, and if only he had endeavoured to abide even for a few consecutive years by these definitions, how different would have been the result! But we should have exchanged the wild visionary, the inspired seer, for the duller, more temperate man of science.

Let us, then, not part from our subject without giving Freud his due. In him we recognise a great genius who has contributed vastly to the advance of psychopathology, but whose inspirations have been tainted by his peculiar temperament and have not been adequately controlled by critical intelligence and by a knowledge of normal psychology. A brilliant theory, even if it be wrong and impossible, has a stimulating influence in arousing opposition and in encouraging the discovery of new facts that will refute it. The pity is that its acceptance is often so wrapped up with suggestion, faith, and worship that an appeal to reason becomes ineffective.

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[19] Ibid., pp 272 ff.

[20] Introductory Lectures on Psycho analysis, pp 1926, 190

[21] Collected Papers, vol. iv, p 98 ff.

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**Royal London Ophthalmic Hospital.**—The chief facts recorded in this year's report are, first, that plans have been drawn up to build the extra nursing accommodation required (these have met with the approval of King Edward's Hospital Fund and £2500 towards the £10,000 needed has already been collected); secondly, that this was the first hospital to be equipped with a wireless installation by the *Daily News* fund; and thirdly, that the hospital is indebted to the Medical Research Council for its gift of a mercury-vapour lamp by means of which artificial sunlight treatment is now being provided for those cases likely to derive benefit. This has proved a valuable addition to the resources of the hospital, as was apparent from papers read by Mr C. Goulden and Dr W. S Duke-Elder at the annual congress of the Ophthalmological Society held recently.

# THE PATHOLOGICAL ACTION OF LIGHT UPON THE EYE.

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## PART II.*—ACTION UPON THE LENS: THEORY OF THE GENESIS OF CATARACT.

SINCE Brisseau, in 1705, first drew attention to the fact that cataract was nothing more than an opaque lens, a very large amount of work and a still larger amount of speculation have gathered round the cause of the formation of the opacity, but it is only of recent years that the fundamental aspects of the problem have been approached. From time to time light and heat have been stigmatised as the cause of one or other of the forms of this disease, often on somewhat indirect and circumstantial evidence. The main cause of the popular rejection of this hypothesis would appear to be the comparison of the dramatic effects produced in the test-tube or in the laboratory animal with the gradual process which occurs clinically, and a failure, until recently, to consider the more intimate beginnings of the process instead of the gross end-results. In a comprehensive theory of the genesis of cataract it would seem that, with certain exceptions to be pointed out later, the fundamental cause of cataract in all its forms may be traced to the incidence of radiant energy directly on the lens itself.

Although recognised as of different nature because they are appreciated by different receptor mechanisms, and although embracing phenomena apparently so diverse as light, heat, and chemical and electrical effects, the whole of the energy spectrum is of fundamentally identical character, believed to be electromagnetic vibrations travelling in the hypothetical ether, differing only in the length, frequency, and amplitude of their waves. All radiations transfer energy to the substances which absorb them; the longer waves by increasing molecular movement produce primarily a thermic effect, the smaller ones, whose frequencies correspond to the intra-molecular oscillations, by increasing atomic motion, induce direct atomic disintegration with consequent photochemical and photo-electrical effects. Every substance absorbs radiant energy to a greater or less degree, and its reaction to that energy is in the last analysis identical, and is dependent upon this absorption, whereby energy is transferred to its molecules or their parts with the result that they are shaken apart. Apart from this there is no evidence of any specific action peculiar to any wave-length.

### 1. *The Radiant Energy Affecting the Lens.*

In order to reach the lens incident radiant energy must first traverse the cornea and the aqueous, and since the first of these is the more absorbent, the nature of the radiations to which the lens is exposed is determined by the transmission of this structure. The transmission of the cornea in the mid-spectrum has already been discussed in the preceding article; in addition, like all living structures, it is transparent to the very long and the very short wave-lengths at either extreme end of the known spectrum. For all practical purposes it may be taken that the lens is reached by incident radiation of wave-lengths of the order of $10^{10}$ Angström units (electrical oscillations), those in the region 20,000 to 3000 (short infra-red, visibles, and long ultra-violet), and those of the order of one A.U. (X rays, gamma rays).

Having reached the lens one of five things may happen to the energy represented by these rays. It may be (1) absorbed into the energy system of the lens, causing changes therein; (2) transmitted according to the laws of refraction, without affecting the lens; (3) dispersed by the particulate structures in the lens, whereby its path is changed; or (4) it may induce fluorescence; while (5) a small fraction is reflected from the surfaces.

It is with the absorbed portions of the incident energy that we are primarily interested in the consideration of its possible pathological effects upon the lens, since only these can exert an effect, deleterious or otherwise, upon it; and those rays between 20,000 and 3000 will concern us most, inasmuch as the spectra of all ordinary sources lie between their limits. At the upper end of this region, in the infra-red, the percentage absorption has been investigated by Hartridge and Hill, whose results corroborate the earlier conclusions of Aschkinass and Vogt. Above 20,000 A.U. no rays, and above 14,000 A.U. practically no rays get through the cornea; from 13,500 to 11,000 the lens absorbs about 25 per cent. of the incident energy; thereafter, apart from a band at 9750, it is to all intents and purposes transparent, especially from the commencement of the visible spectrum until we come to the long ultra-violet at 4000. A very large number of experimenters have made determinations of the limit of transmission and the commencement of absorption in this region, and it has been established that in the normal adult absorption in quantity begins at 4000 and is largely complete at 3500 (Parsons, Martin), although transmission is slight down to about 3200 (Shoji, Glancy). The limits vary considerably, however, with age and with the amount of pathological sclerosis present; thus, in the young the lower limit is 3055 (Shoji) or 3100 (Schanz), in the aged the upper limit is frequently 4200 (Hallauer), while in the cataractous lens absorption is marked well within the violet—4400 (Graham). In both cases this rise can be correlated with a corresponding rise in the absolute and relative albumoid content of the lens, which substance, being the most strongly absorbent of its constituents, largely determines the absorption of the whole.

In the average normal adult, therefore, a large proportion of the rays between 14,000 and 11,000, and between 4000 and 3200, and practically all the rays between 3200 and 3000 are absorbed; those of the first two spectral regions will produce a potentially pathological thermal effect, those of the third will produce an abiotic effect as well as a mild thermal one. The fact that abiotically active rays are so absorbed is seen in the observations of Schulek and Birch-Hirschfeld, who found that an exposure to ultraviolet, which in the normal rabbit left the retina unaffected, produced typical abiotic changes in the retina of the aphakic rabbit.

A considerable amount of transmissible light is dispersed in its passage through the lens—a Tyndall effect. Van der Hoeve (1918) showed that the lens is an optically heterogeneous substance, in which solid particles, many of them in Brownian movement, can be seen on dark-ground illumination. Light is dispersed from these particles, partly polarised, but with its wave-length unchanged. The short waves are most affected in inverse proportion to the fourth power of their wave-lengths (Rayleigh's law)—i.e., 16 times more ultra-violet of wave-length 4000 will be dispersed than infra-red of 8000. This deflection of the shorter waves accounts in part for the protective function of the lens over the retina observed experimentally by Birch-Hirschfeld, but since the wave-lengths are unchanged it can have no pathological action on the lens itself apart from the action of the incident light, except in so far as its path in the lens is lengthened, and the amount absorbed will, therefore, be proportionately increased.

Fluorescence is a phenomenon whose intimate nature is little understood. When light passes through a fluorescing substance the particles of the substance become light sources themselves, emitting light of wave-length different from that of the incident light, preponderatingly longer, but also shorter. Measuring by Newton's method of crossed spectra, Schanz (1909) found the region of maximum fluorescence in the lens to be from 3500 to 4000. The effect of this phenomenon is regarded differently. Considering that its production implied absorption, Schanz looked upon it as deleterious; in any case, any shorter waves so produced will be more easily absorbed. On the other hand, from the work of Burge (1915), who correlated a decrease of fluorescence with an increase in the coagulability of lens proteins, it is probable that it may be looked upon rather as a protective mechanism, whereby active short waves, which might induce coagulation, are changed largely into long (visible) waves which are less active, by which means their energy, being in a more transmissible form, is the more safely got rid of.

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### 2. *The Concentration of Radiant Energy in the Lens.*

From a pathological point of view the concentration of incident radiant energy in its passage through the lens is of primary importance. Two opposing factors are at work: a concentrating effect due to refraction by the optical system of the eye, and a dissipating effect due partly to the specific absorption of the media and partly to irregular loss incurred by reflection in passing between media of varying refractive indices, by dispersion in passing through the substance of optically heterogeneous media, and by spherical and chromatic aberration. The loss can be calculated with fair exactitude. With regard to the first factor there is no specific absorption by the media of the eye apart from that due to a dilute watery solution of protein, whose magnitude has been calculated by Aschinas (1896), Luckiesh (1913), and Hartridge and Hill (1915). Most of the energy is absorbed in the anterior part of the eye, the absorption rapidly decreasing exponentially as the depth of the layer increases. The loss by general dispersion may be taken as 10 per cent. of the incident energy.

The total density of energy in the lens depends further upon the size of the pupillary aperture and the size of the illuminating source. For small and intense radiants, such are used experimentally and clinically, the source may be taken as of constant area corresponding to the circle of diffusion, and the intensity of energy concentration varies as the inverse square of the distance from the eye (Charpentier). For sources subtending a relatively small solid angle there is a uniform mean energy density throughout more than half the path through the eye (Luckiesh), since the absorption and dispersion of energy in the media counteract fairly exactly the concentrating effect of refraction; for these sources, there is, therefore, no serious concentration in the lens. But for sources of large extensity the distribution is widely different, since the ratio of energy density just behind the pupillary region varies approximately as the solid angle subtended by the source. Thus, for a source subtending the maximum solid angle of 120°, the energy density in this region is greater by several million times than with a small source—this, it is to be noted, when the energy intensity at the retina is the same, the retinal image is of the same brightness, and the spectral character of the illuminant and the intensity of the illumination are the same. Thus, while a source of small area, as is used experimentally, may be harmless, a similar large area, as the sky, a snow-field, the desert, or a sheet of molten glass or metal entails an enormous energy concentration in the region of the lens. This is a consideration which has been largely overlooked in the interpretation of experimental work undertaken to elucidate the pathogenesis of cataract.

### 3. *The Pathological Action of Radiant Energy on the Lens.*

(1) *Action on the Lens Capsule.*—The longer wavelengths produce a thermal action on the lens capsule which can readily be obtained experimentally. Tissue death is induced by coagulation of the proteins, with subsequent exfoliation of the cells.

When in sufficient intensity, the shorter wavelengths produce a typical abiotic effect (Hess, 1909; Martin, 1912; Verhoeff and Bell, 1916). This is not obtained unless a critical exposure is given, since with great intensities of radiation the cornea turns opaque and protects the underlying structures, while with lesser intermittent exposures the factor of physiological repair in the time interval comes into play. After short exposures swelling of the cells is the only change noted; further intensities involve the appearance of the typical eosinophilic and basophilic cells associated with abiotic reaction; more prolonged and intense exposures induce nuclear pyknosis. Round the periphery of the exposed area, just underneath the pupillary margin, there is a zone of cellular proliferation surrounded by an area of marked karyokinetic activity. This has been variously explained as being due to compression of the marginal cells by the central swollen cells (Hess), which cannot readily explain the nuclear activity; to stimulation due to submaximal damage (Martin), an assumption difficult to accept since no short waves can penetrate the iris overlying the affected area; and to the action of toxic substances diffused from the injured iris cells (Verhoeff and Bell), which does not explain its strict localisation. In all probability the changes are due to stimulation of cellular activity by the heat which is absorbed in quantity by the iris pigment, which in this region comes into direct contact with the lens capsule.

(2) *Action on the Lens Substance.*—The action of radiant energy upon the lens substance is to produce opacity, or so to increase the lability of its colloidal system that the formation of opacity is more easily produced by other influences. Since the fundamental happening in the formation of the opacity of cataract is the coagulation of the lens proteins, a brief résumé of their nature and their reactions is essential to the understanding of the problem.

*The Lens Proteins.*—These have been investigated by Laptschinsky (1876), Morner (1894), and more recently with more refined methods of purification by Jess (1913). They are four in number: (*a*) "albumoid," a water-insoluble protein found especially in the nucleus; two water-soluble proteins found especially in the cortex—(*b*) α-krystalline, mainly in the outer cortex, and (*c*) β-krystalline, mainly in the inner cortex; and (*d*) albumin in small quantity.

Throughout the body generally active metabolism is closely associated with the presence of cystein-containing proteins; this amino-acid is found in large amount in β-krystalline, in less amount in α-krystalline, while the "albumoid" contains practically none. Correspondingly, with age the insoluble protein (albumoid) increases and the soluble proteins (krystallines) decrease (Jess, 1920); this process is thus accompanied by a gradual and parallel diminution of the cystein content of the lens with advancing years (Goldschmidt, 1917). A similar process occurs in cataract, where combined cystein may be partially or completely absent, while the albumoid content is increased (Jess; Reis, 1912). It is to be noted that the whole of the SH-reacting compound is not bound up with protein; a part of it is dialysable (Abderhalden and Wertheimer, 1922), which part has been recognised by Goldschmidt (1924) to be glutathione.

*The Lens Metabolism.*—Both physiologically and pathologically the lens is a sluggish tissue, but to live and to maintain its transparency it must possess a metabolism, which involves primarily a respiratory mechanism. The presence of this mechanism has been definitely established and the oxygen up-take measured (Adams, 1925). Throughout the body there are two main types of respiratory mechanism—an external one whereby respiratory gases are mediated directly by the blood stream, and an internal one, recently elucidated by Hopkins, whereby a balanced autoxidation mechanism is maintained in a constant chemical equilibrium by an oxidation-reduction system of an SH<—>SS type. Loeb Cascio (1922) claims to have demonstrated the presence of oxidases and catalases in the lens, but, while these may have a secondary activity as in the oxidation of certain fatty acids (Ahlgren), it is practically certain from the work of Goldschmidt (1924) and Adams (1925) that the internal metabolism of the lens is carried on by an autoxidation system wherein glutathione acts as a hydrogen donator, which reduces the hydrogen acceptors, and $\beta$-krystalline acts as a thermostable residue which reduces the glutathione after it has been oxidised. The lens is an avascular structure, and this internal system, which in other tissues is of secondary importance, presumably becomes here the central fact in metabolism, and if it is destroyed or partially put out of gear it would seem to follow that the transparency of the lens must suffer. Accordingly, we should expect to find, as Goldschmidt (1924) claims to have demonstrated, that the normal lens has a higher glutathione content than other tissues and that corresponding with the decrease in cystein—i.e., krystalline—content with increasing age, the reduction power also decreases. Similarly, in the cataractous lens, which is poor either in cystein or in glutathione or both (Adams), the reducing power decreases with the state of maturity. Running parallel with these changes, we have already noted the increase of absorption of light by the lens in these two conditions; while, connecting the two sets of phenomena, Adams has shown that the glutathione content, and therefore the metabolic efficiency of the lens, is lowered considerably after exposure either to heat or to ultra-violet rays.

The so-called "lipoid substances" (phospholipins, sterols, &c.) in the lens probably have some effect on the working of the autoxidation system by increasing the rate of oxidation (Meyerhof, 1923). It is significant that, according to the findings of Goldschmidt (1922), these substances are at a minimum about the decades 40 to 60, and that in the cataractous lens they are withdrawn from solution, and therefore from activity, and deposited as crystalline or amorphous particles (Valetin, 1919), which may be macroscopically evident.

*The Coagulation of Protein.*—According to the most recent ideas, proteins may be changed from the colloidal to the particulate form by two distinct processes: precipitation and coagulation. Precipitation, which is brought about by the action of concentrated salts as ammonium sulphate or by alcohol, is a reversible and purely physical change whereby aggregates of chemically unchanged particles are thrown out of colloidal solution in a condition capable of reversion to their original colloidal state; with this we are probably not concerned in the development of cataract. Coagulation, on the other hand, is a complex process which takes place in two stages: (1) denaturation (Chick and Martin, 1910), whereby the natural protein is chemically altered to a form in which it is readily coagulable; (2) agglutination, a physical process whereby coagula are formed by flocculation of the denatured particles.

The intimate nature of the primary chemical change of denaturation is not yet cleared up. Chick and Martin conclude that it is a reaction between the natural protein and water. This, according to Pauli (1910) and Robertson (1911), is a dehydration, involving the formation of an internal anhydride by the elimination of $H_2O$ between the terminal $NH_2$ and COOH groups of the protein chain, with a possible tautomeric keto-enol transformation in the peptide linkages. Harris (1922), however, has brought evidence to show that it is more probably a hydrolysis involving the production of a sulphydryl group from the thiopeptide linkages. In the development of cataract a considerable amount of hydrolysis of this type takes place, since in the aqueous of cataractous eyes deposits of tyrosine seem to be frequently found (Burdon-Cooper, 1914), while the pigment found in the so-called "black cataract" is melanin, an oxidation product of tyrosine (McHardy, 1882).

From the point of view of this thesis there are three aspects of this reaction that are of especial interest: the factors causing it, its time relations, and the influences which may aid or accelerate its development. Coagulation appears to be brought about under suitable conditions by any form of radiant energy, and, moreover, by mechanical stress. The most common and best known form in which this energy is received is heat (Chick and Martin); visible light also brings it about (Young, 1922); coagulation is also induced by ultra-violet (Dreyer and Haussen, 1907; Bovie, 1913; Clark, 1922); and by radium (Dreyer and Haussen, 1907; Fernan and Pauli, 1915). In the case of the shorter wave-lengths the primary action of denaturation is not identical with that caused by the longer heat waves. Thus in place of the high temperature coefficient which characterises the reaction to heat, denaturation following exposure to ultra-violet light, like other photochemical processes, has a very low temperature coefficient. In the last analysis, however, both are identical, and the second process of agglutination is never photochemical, but is a spontaneous consequence of the thermal or photochemical denaturation which precedes it. Coagulation is further produced by energy imparted to the molecules of the protein by mechanical shock, such as agitation, or by the application of any undue strain, as on the surface of expanding air bubbles or any marked double phase such as is produced in the mixing of two immiscible liquids, or the application of great hydrostatic pressures (Bridgman, 1914). As will be seen, all these forms of energy may be correlated to form a comprehensive theory of the development of cataract in its many clinical forms.

The time factor in the process of coagulation has often been brought forward as an objection to any theory of cataract formation by the direct influence of radiant energy. On comparing the coagulation of proteins in the test-tube or the experimental production of lenticular opacity in the laboratory with the extremely slow and gradual development of the usual forms of cataract, and even of such forms as glass-blowers' cataract, it has been felt that the difference in time puts the two in entirely different categories, and has led to the theory at present generally accepted—of indirect malnutrition. Such an objection, however, does not take cognizance of the chemical nature of the processes involved. Chick and Martin have shown that the process of denaturation is a chemical process of the monomolecular order, and that upon it the effect of temperature is merely acceleratory. According to these observers, it is an orderly time-process, influenced by temperature according to a logarithmic law which is represented fairly exactly by the equation of Arrhenius, and the so-called "coagulation temperature" of various proteins merely depend on the extremely high temperature coefficient (1·91 per 1° C. for albumin) possessed by the reaction. With rising temperature a critical point is reached at which the energy supply is sufficient to impart a velocity capable of completely overcoming the existing forces tending to stability, and the reaction, hitherto slow, suddenly becomes so rapid as to appear almost instantaneous. Incident energy, therefore, in the form of heat, light, &c., in sufficient intensity acts as a catalyst to the chemical action of denaturation, without which it would proceed infinitely slowly. On this ground alone the time objection is rendered invalid.

There is, however, another factor which probably is of more importance. The two processes of denaturation and agglutination which together constitute coagulation are distinct, and while under the usual experimental conditions they occur practically simultaneously, they may be separated by a time interval of theoretically infinite duration. The influx of radiant energy may induce denaturation and induce it over a very long time interval, and the denatured protein may then remain unagglutinated, leaving the medium of which it forms part transparent until such time as suitable conditions induce flocculation and consequent opacity. It is here in all probability that any influence of malnutrition may play a part in cataract formation as a secondary factor. Thus Mond (1922) has shown that after ultra-violet radiation, such as will not produce coagulation, proteins show definite physical and chemical changes, and exhibit a decrease in stability, becoming more labile and more readily coagulable by various agencies. Correspondingly in the lens Burge (1910) claims that if a lens, after exposure to ultra-violet radiation which left it still clear, be immersed in certain salt solutions of concentrations which left the normal lens unaffected (0·1 per cent. CaCl) it turned opaque. The clear and apparently unchanged lens is therefore modified in such a way by radiation that its proteins are readily coagulated by small changes in the salt concentration of the medium in which it lies. An analogous clinical occurrence is the fact that in India, where the eye is exposed to excessive solar radiation and where cataract is common, the lens while yet apparently normal frequently is darkly pigmented with melanin (see Collins, 1925), an oxidation product of the hydrolysis of protein. These considerations may be compared with the significant observation of Adams (1925), that after exposure to heat or ultra-violet radiation the lens, while yet clear, showed a decreased glutathione content. These two considerations should be viewed in the light of the fact that in the lens, possessed as it is of a very sluggish metabolism, the factor of physiological repair will not come into play as evidently as in a more active tissue, and slight degrees of submaximal damage will therefore tend to become largely additive.

The main factors influencing the incidence of coagulation are the concentrations of salts and hydrogen ions. The primary reaction of denaturation itself involves a change of reaction depending on the pH of the medium, and the maximum rate of agglutination of the denatured protein occurs at the iso-electric point (Sörensen, 1911; Michaelis, 1911), because the state of dispersion of the particles is due to their mutually repulsive electric charge, which at the iso-electric point is neutralised. Correspondingly, Goldschmidt (1924) found that the reducing power of the lens was very sensitive to changes in reaction, disappearing if the medium was more acid than pH 7·0. He suggests that the most probable cause of all cataract other than traumatic is a gradually rising hydrogen-ion concentration, thus upsetting the autoxidation system. But the pH of the aqueous appears to be fairly constant at 7·3 to 7·5 (Meesman, 1924; Hertel, 1921), and in cataract it has been invariably found to be alkaline (Burdon-Cooper, 1914). In the rabbit the pH of the two is the same, and with an alkaline aqueous an acid lens is at any time unlikely; while, therefore, it would seem improbable that the reaction is of primary importance, its influence as a secondary factor is undoubted. Thus, for example, Hertel (1921) found in a case of diabetic coma a pH as low as 7·02 in the aqueous.

The other secondary factor of great importance is the salt concentration. In the process of agglutination the electrolytes act by altering the reaction of the protein-containing medium, or by neutralising or increasing the electric charge carried by the protein particles according as the charge on the protein is of similar or opposite sign to that carried by the more potent ion of the salt. Schanz (1915) found that the addition of salt to pure protein increases its power of absorption of light, and the great effect of the presence of salts, particularly calcium salts, upon the formation of lenticular opacity by ultra-violet light found by Burge has already been alluded to. In addition, other substances seem to have a similar sensitising effect on coagulation by light, the most interesting of which are glucose and acetone (Schanz, 1915; Young, 1922).

Apart from this influence in association with light, salts can have no direct precipitating action on the lens protein in vivo, since they could never accumulate in sufficient concentration. Thus it requires a 2·25 per cent. solution of calcium salt (Nelson, 1923) or 6 per cent. of glucose (Deutschmann, 1887) to induce opacity in the lens. They have, however, a further and very important influence in determining osmotic change. The lens, surrounded by its capsule, forms a separate physico-chemical system from the aqueous. Its chemical composition is widely different, while its osmotic value is equivalent to a 1·2 per cent. solution of NaCl (Manca and Ovio, 1898), whereas that of the aqueous is equivalent to a 0·9 per cent. solution. Owing to the tonic pull on the capsule by the ciliary muscle the internal tension of the lens is kept at a higher level than that of the aqueous, and, therefore, while fluid may pass out by filtration and diffusion, it can only enter by osmosis. To form an intelligent picture of the maintenance of the intra-vitam equilibrium we must postulate some forces acting after the manner of a semipermeable membrane, and work must constantly be being done by osmosis acting against the filtration pressure induced by the tonic pull of the ciliary muscle. That this mechanism is the lens capsule is seen by experiment, for on damaging it experimentally (Hess, 1887), or in the operation for the maturation of immature cataract, or on rupturing it as in needling, the lens behaves as does the dead lens—it puts on weight by the addition of aqueous, swells, and turns opaque. The normal mechanism is therefore deranged and aqueous will enter (1) if the difference between the osmotic pressures is increased; (2) if the internal tension of the lens is lowered or the intra-ocular pressure is increased; (3) if the vitality of the "semipermeable membrane" is lowered or its continuity broken.

The first will occur in certain diseased states as diabetes; the internal tension will fall with the loss of elasticity of old age; an increased intra-ocular pressure may act in absolute glaucoma; and the membrane is ruptured in trauma, while its vitality is lessened in debility and nutritional deficiences or under the action of light. This last does not necessarily depend on any gross pathological change such as we have noted to be produced by the massive radiation of thermal or actinic rays, but would appear to be a very widespread physiological phenomenon in nature. In its effect on the turgor of plants it is responsible for heliotropic curvature. In its preferential permeability the lens capsule resembles closely the red blood corpuscles; the potassium content of the lens is said to be 38·8 per cent., of which 0·6 per cent. is in solution as KCl, while in the aqueous there is the merest trace (0·03 per cent.) of this element. the potassium content of the corpuscles is 0·425 per cent., that of the serum 0·02 per cent. Ultra-violet radiation changes the "permeability" of the red cell and induces hæmolysis. The percentage of total potassium falls in the lens in cataract from the normal figure of 38·8 to 9·8, according to the analysis of Burge (1909), and the loss of soluble protein and glutathione in the cataractous lens has already been referred to. Both processes are presumably to be accounted for by diffusion through a membrane of altered permeability. It is more than probable, therefore, that the shorter wave-lengths derange the "permeability" of the capsule, and facilitate the interchange of water and salts.

The mechanism of opacity formation by this agency is, in the first place, the entrance of fluid in quantity sufficient to form vacuoles between the lens fibres; these being of a refractive index different from the lens substance disperse the light, and the lens, while its fibres are still clear, appears opaque. Later and more slowly coagulation of the proteins occurs, a process in which it is probable that one or other, or all, of the following factors act—mechanical strain on the fibres inducing denaturation, comparable to the effect on the surface of a soap bubble or at the interface between two immiscible liquids, a change in salt concentration and reaction, and a diffusion outwards through the now "permeable" capsule of the diffusible substances, which include both active parts of the respiratory system—the glutathione and the β-krystalline.

*The conclusion of Part II. with bibliography will appear in our next issue.*

# A NOTE ON THE RELATIONSHIP BETWEEN DESTRUCTION OF TISSUE AND BACTERICIDAL POWER OF BLOOD.

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In the course of research on the action of mustard gas on the blood of guinea-pigs and rabbits, serological experiments were carried out.

1. As regards alexin, these experiments showed that a fall occurred when guinea-pigs were subjected to mustard gas by inhalation and by subcutaneous injection. The fall of alexin was most marked in high concentrations such as 1 in 50,000 by inhalation, and also by subcutaneous injections, but less marked and transient in lower concentrations such as 1 in 200,000. It was further noted that this fall was *in no way related to the number of leucocytes,* for in these experiments any changes that occurred in the leucocyte count bore no relation to the fall in alexin.

2. As regards other antibody formation, if mustard gas be injected either before or together with antigen there is (*a*) no great prolongation of the latent period *in agglutination production, and (b) a marked restraining* influence on the production of antibodies.

3. If mustard gas be injected during the process of immunisation the restraining process is still present though lessened

4. If mustard gas be injected at the height of antibody formation the normal fall is much hastened.

In view of these findings it was thought that a measurement of the bactericidal power of the blood would give a better indication of its defensive mechanism, and this study forms the subject-matter of this article.

### *Description of the Experiments.*

The method employed throughout this research was a slight modification of that described by Sir Almroth Wright, based on research work done in collaboration with L. Colebrook and E. J. Storer and published in The Lancet.[1]

The principle of the method is to implant graduated quanta of microbes into the blood (in vitro); to introduce *the implanted blood into "slide cells"; and to incubate for* 24 hours at 37° C., to allow surviving microbes to grow into colonies. These colonies are counted against similar implantations into blood hæmolysed with distilled water (*thus destroying its bactericidal power*) and incubated at the same temperature for the same length of time; this constitutes the control. Guinea-pigs were found to be more suitable than rabbits, as the strain of staphylococcus used *was actively hæmolytic to rabbits'* blood; in addition, considerable spreading of colonies occurred, which rendered their accurate counting difficult. The blood was obtained by cardiac puncture and afterwards defibrinated, as the *employment of decalcifying agents* was found by Colebrook and Storer considerably to reduce its power to kill staphylococci and streptococci.[2]

The suspension of microbes for implantation into the blood was prepared as follows:—

A required number of unit-volumes of the recipient fluid (Ringer's fluid to which a small quantity of serum has been added) was aspirated into a capillary pipette and finally one unit-volume of a 24 hours' broth culture of staphylococcus; this latter volume was then slowly expelled on to a filter paper and finally the recipient fluid driven to the end of the pipette and expelled into a small dilution tube; by aspirating and expelling several times, the whole of the "wash" is thoroughly embodied in the recipient fluid. From this "wash" further weaker washes were prepared. For each separate test one "slide cell" with four compartments was employed.

Into the first compartment was introduced 50 c.mm. defibrinated blood + 2·5 c.mm. 1/10th wash bacterial suspension.

Into the second compartment 50 c.mm. defibrinated blood + 2·5 c.mm. 1/20th wash bacterial suspension.

Into the third compartment 50 c.mm. defibrinated blood + 2·5 c.mm. 1/40th wash bacterial suspension.

Into the fourth compartment 50 c.mm. defibrinated blood + 2·5 c.mm. 1/80th wash bacterial suspension.

As a control a similar slide contained: 50 c.mm. defibrinated blood + 150 c.mm. distilled water + 2·5 c.mm. 1/80th wash bacterial suspension. This latter bulk occupied the four compartments, and as a full complement of colonies should develop, the larger area allowed counting to be easily and accurately carried out. This method of control was verified on a few occasions by an agar count.

Three methods of exposure to mustard gas were employed: 1. By inhalation; the substance was dispersed by heat and the concentrations used were 0·07098 mg. per litre (1 in 100,000), 0·14196 mg. per litre (1 in 50,000), and 0·3549 mg. per litre (1 in 20,000). 2. By subcutaneous injections of doses varying from 10 to 88·8 mg. per kilo body-weight. 3. By application to the skin of 40, 80, and 120 mg. per kilo body-weight. This was applied within a one-inch ring to the shaved backs of three guinea-pigs.

### *Results.*

1. (*a*) After exposure to concentrations of mustard gas by inhalation, *0·07098* mg. per litre *(1 in 100,000)* and 0·14196 mg. per litre (1 in 50,000) for half an hour, it was observed that there was a tendency for the hæmobactericidal power to fall slightly 24 to 48 hours after exposure, and to rise again to normal or above after 72 hours. (*b*) After severe gassing—i.e., 0·3549 mg. per litre (1 in 20,000) for half an hour, *a distinct increase in the hæmobactericidal power* 20 hours after gassing was observed.

2. After subcutaneous injections of mustard gas in doses varying from 10 to 88·8 mg. per kilo body-weight, there is noted a distinct increase in the hæmobactericidal power within 24 hours of injection; the larger the injection the greater is the increase, *100 per cent. being repeatedly recorded after injections* of 60 to 80 mg. per kilo body-weight. It may be noted that after large doses the majority of the animals died soon after blood was taken, but this very high bactericidal power of the blood is also recorded after the same large doses in animals which survived up to 72 hours.

3. After application to the skin, the hæmobactericidal power was observed to be markedly increased after 24 and 48 hours. As in the case of subcutaneous injections, the larger the dose the more marked was the increase in the hæmobactericidal power. Detailed results of all experiments are tabulated in appendices 1–17, but not included here for lack of space.

In view of the foregoing results, experiments have been carried out with a view to ascertaining the action of mustard gas on the whole blood in vitro.

Three tubes containing 1 c.cm. of blood to which mustard gas was added in the following proportions: 1 in 1000, 1 in 2000, 1 in 5000, were incubated at 37° C. for 24 hours. The blood containing 1 in 1000 mustard gas was almost black in appearance and of the consistency of treacle; the 1 in 2000 was much less dark in appearance and less viscid; the *1 in 5000* was the least altered in colour and viscosity. It was ascertained spectroscopically that the change of colour was due to the formation of acid hæmatin. In each case the oxygen capacity was found to be much lowered. *Similar experiments carried out with 0·45 mg. of* hydrochloric acid, an amount corresponding to a third of the quantity of acid which would have been produced by complete hydrolysis of the amount of mustard gas in the *1 in 1000 concentration, gave analogous results. Implantations* of staphylococci in a medium of agar to which had been added the same proportion of mustard gas failed to develop owing conceivably to the acidity of the medium resulting *from the hydrolysis of the added* mustard gas.

Other previous experiments in which various other proportions of mustard gas were injected intravenously yielded spectroscopically no bands other than those of oxyhæmoglobin.

It is assumed that the difference exhibited by the hæmoglobin in these last experiments in vitro and those carried out in vivo can only be due to the greater action of the buffer substances in vivo. Hence, no comparison can be established and no deductions drawn. Finally, 150 mg. of undiluted hydrochloric acid were applied to the skin, and the results compared with those obtained by the application of mustard gas to the skin. In both experiments the hæmobactericidal power was found to be increased 24 hours after the application, but more so in the case of mustard gas. Further, in the case of hydrochloric acid, it returned to normal 48 hours after application, whereas in the case of mustard gas it remained at about the same level.

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[1] The Lancet, 1923, i., 365, 417, 473.

[2] Brit. Jour. Exp. Path., April, 1924, vol. v., No. 2.

### *Discussion of Results.*

In considering these results, the fact must not be lost sight of that the hæmobactericidal power before gassing was by no means a constant, and was found to vary in the same animal from day to day in spite of care taken to feed and house the animals properly and to prevent them being subjected to fright, factors known to have an influence on the hæmobactericidal power. Nevertheless, the experiments show that interesting changes take place in the hæmobactericidal power after exposure to mustard gas. The tendency is for the hæmobactericidal power to increase after exposure to the concentrations used either by inhalation, subcutaneous injection, or application to the skin. In the lower concentrations by inhalation, where small implantations are employed, the hæmobactericidal power has a tendency to drop 24–48 hours after exposure, but rises again to or above normal within 72 hours; with larger implantations in the same concentrations this transient drop is very much less marked. Here might be mentioned the fact that upon making graduated implantations of living microbes into the blood, the fewer implanted, the greater the percentage of survivors, and with quite small implantations, a survival of a full 100 per cent. is often recorded. The implantations throughout this research were from moderate to large, and as far as possible uniform before and after exposure to mustard gas. In the highest concentration used for inhalation an increase in the hæmobactericidal power was recorded in all implantations, and where mustard gas was administered by subcutaneous injection and by application to the skin there is an early rise in the hæmobactericidal power in all implantations.

The above findings would appear to be contrary to those anticipated in view of the previous research carried out on the effect of mustard gas on alexin and antibody formation, and incidentally to the well-known fact that mustard gas lesions are so resistant to treatment. What, then, is the explanation of this increased hæmobactericidal power after exposure to mustard gas? The increase in the hæmobactericidal power or natural response to cope with infection or other foreign materials in the body is of a primary and secondary nature; the former makes use of phagocytic action, and where the serum is naturally bactericidal, also of serobactericidal action; the latter makes use of antibacterial elements given out by the leucocytes when these are incited by infection or other means, and it is mainly by this ectocytic chemical action, and only to an insignificant extent by phagocytosis and internal digestion, that the bactericidal action of the leucocytes is exerted.

It is considered that the increased hæmobactericidal power observed can be accounted for by the pathological findings after inhalation, subcutaneous injections, and the application of mustard gas to the skin. In the case of inhalation experiments, in the concentration of 1 in 20,000, it was found histologically that the upper air passages, the greater part of the bronchial tree, in addition to the lungs, were invaded by leucocytes in every stage of disintegration. In the case of subcutaneous injections and application to the skin the same invasion of leucocytes is seen at the sites involved, directly attributable to the intense reaction set up by mustard gas.

As stated above, it is the antibacterial elements given out by the leucocytes which constitute the hæmobactericidal power, and it is conceivable that in the course of their disintegration a considerable pouring out of these elements into the blood takes place. *Previous work has shown a fall in alexin after exposure to mustard gas*, and as no change of note has been found in the blood count, it is reasonable to assume that the origin of alexin may not be the leucocytes. Although the general consensus of opinion favours the view that the alexin is essential for the formation of bacterial antibodies, the results of these experiments do not bear out this view, inasmuch as the alexin was found to be greatly diminished.

On further consideration it was thought necessary and desirable to exclude certain possible factors which might have influenced the results obtained. 1. It was considered necessary to ascertain whether the hæmobactericidal power could possibly be affected in those cases in which the blood specimens were obtained from animals in a moribund condition.

2. Experiments were carried out with other substances causing tissue destruction to confirm the views expressed as to the cause of the increased hæmobactericidal power.

As regards (1) the following experiments were carried out:—

(*a*) A guinea-pig was given a lethal dose of amyl nitrite, and his hæmobactericidal power *at the point of death* was compared with his normal. There was no change.

(*b*) A guinea-pig was given a lethal dose of nitroglycerine and his hæmobactericidal power *at the point of death* again compared with his normal. No change was noted.

(*c*) A guinea-pig was asphyxiated by mechanical means and again no change was noted in the hæmobactericidal power at the point of death.

The reason why amyl nitrite and nitroglycerine were selected was because in neither case is destruction of tissue brought about, and further, because both these substances produce a fall of blood pressure as is the case with mustard gas.

As regards (2) the following experiments were designed with the purpose of confirming the conclusion arrived at. Those substances known to produce destruction of tissue—namely, hydrochloric acid, liquor epispasticus, and formic acid—were applied to a shaved area of skin of the back of guinea-pigs and a comparison of their hæmobactericidal power at the end of 24, 48, 72 hours, and six days made with their normal.

In the first experiment 75 mg. of hydrochloric acid were applied within two adjacent one-inch gelatin rings. In the second experiment 150 mg. of liquor epispasticus were similarly applied.

In the third experiment 75 mg. of formic acid were applied within a one-inch gelatin ring.

In the fourth experiment 150 mg. of formic acid were applied within two one-inch gelatin rings (75 mg. in each).

The results obtained showed a pronounced increase of the hæmobactericidal power within 24 hours in all cases, most pronounced in the case of the two applications of formic acid which produced the greatest amount of destruction, and only slightly less pronounced in the case of liquor epispasticus which produced least destruction of tissue.

At the end of 48 hours the hæmobactericidal power, though still much increased, showed a slight decline when compared with that present at the end of 24 hours.

At the end of 72 hours the hæmobactericidal power, though higher than normal, showed a further decline.

At the end of six days the hæmobactericidal power in the case of three animals reached its normal level, the fourth animal dying on the fourth day. The death of this animal was caused by damage produced by heart puncture in the course of obtaining blood for examination.

If, now, the blood count be considered, it was found that in every case at the end of 24 hours there was an increase of white blood corpuscles concomitant with the increase in the hæmobactericidal power. This same condition obtained at the end of 48 hours, and *pari passu* with the decline in the hæmobactericidal power there was a corresponding decline in the number of white cells. At the end of 72 hours there was a slight increase in the white count in the case of three animals, the one treated with hydrochloric acid showing a fall. Six days after the blood count exhibited no special feature and approximated to the normal.

It is not considered that the ½ c.cm. of blood withdrawn daily during the experiment affected the blood count in any way.

### *Conclusions.*

1. After exposure to mustard gas by inhalation, subcutaneous injection and application to the skin, the hæmobactericidal power has been found to increase; the more severe the exposure, the more pronounced this increase.
2. A similar increase in the hæmobactericidal power has been noted after the application of other tissue-destroying substances such as hydrochloric acid, formic acid, and liquor epispasticus.
3. No change in the hæmobactericidal power is noted at the point of death after the injection of substances which do not produce tissue destruction.
4. It is suggested that this increase of the hæmobactericidal power is due to a considerable pouring out of the antibacterial elements from the leucocytes into the blood as the result of their disintegration.
5. No conclusion is possible from a comparison of the results of the experiments carried out in vitro and in vivo for the reasons given.
6. It would appear that there is some common factor at work—namely, the release of antibacterial elements from the leucocytes at the site of damage, influencing the bactericidal power of the blood.

It is of interest to note the results obtained by Colebrook, Eidinow, and Leonard Hill in their work on the effect of radiation on the bactericidal power of the blood in which an increase in the hæmobactericidal power also occurs.

I wish to take this opportunity to express my indebtedness to Dr. L. C. Martin for his constant assistance and suggestions throughout this research and for his help in the compilation of this paper; also to Sick Berth Chief Petty Officer B. Woolcott, my laboratory assistant, who has carried out the practical work and whose skill in the technique involved in these experiments has been of great help and value throughout this research.

# GREAT DILATATION OF THE LEFT AURICLE.

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THE following is an account of a case which showed a remarkable degree of dilatation of the left auricle. Such a condition was described by Sir Isambard Owen and Dr. Fenton in 1900.[1] Another case was described in THE LANCET in 1923 by Dr. J. G. Emanuel,[2] and a third in 1924 by Dr. Batty Shaw.[3]

### *History.*

The patient was a woman, aged 38 at the time of her death. She was first admitted to King's College Hospital under Dr. H. W. Wiltshire in 1920. She gave a history of rheumatic fever at the age of 16, and after this had had frequent minor attacks of rheumatism. She had also had pneumonia and pleurisy on the left side when she was 21. She had one child 4 years old and had also had three miscarriages. At that time she complained of pain over the base of the right lung. She was thin, cyanosed, and very dyspnœic.

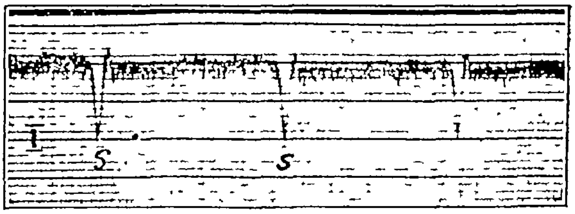
Physical examination showed pulsation of dilated veins at the root of the neck. The chest was rather more prominent on the left side of the sternum than on the right; the apex beat was in the fifth space outside the left mid-clavicular line. Systolic and diastolic thrills were palpable in the mitral area. Dullness extended an inch to the right of the sternum up to the second left rib, and about an inch outside the left mid-clavicular line. A rumbling diastolic murmur was heard near the apex and there was also a systolic murmur conducted outwards. The pulmonary second sound was loud and reduplicated. The apex rate was about 130 a minute and the rhythm showed the complete irregularity of auricular fibrillation. (Fig. 2.) At the right base the breath sounds were poor and percussion note impaired. Pleural frictions were heard here. The Wassermann was negative, the red cell count and hæmoglobin high. Treated with digitalis she improved greatly and compensation became fairly well established.

A diagnosis of mitral stenosis and regurgitation, adherent pericardium, auricular fibrillation, and pleurisy was made. A skiagram taken at this time is reproduced. (Fig. 3.)

In February, 1922, she was again in hospital with acute bronchitis. Again she recovered pretty well. The physical signs on this occasion were as before. Since being in hospital she had attended as an out-patient from time to time, first under Dr. Wiltshire and latterly under my care. Electrocardiograms taken from time to time have shown auricular fibrillation and well-marked preponderating hypertrophy of the right ventricle. She kept fairly well except for occasional attacks of bronchitis. Pain tended to recur at the base of the right lung, especially on exertion. Examined in November, 1925, the same signs were found at the base of the right lung. The cardiac dullness came about 2 inches to the right of the sternum, up to the second left rib, and out to about 2 inches beyond the left mid-clavicular line. Systolic and diastolic thrills and murmurs were present in the mitral area.

In January, 1926, she was admitted under my care with acute bronchitis, very cyanosed, very breathless. The apex rate was about 80, with hardly appreciable irregularity. The beat was very feeble. Dullness came 3 inches to the right of the sternum and extended out to the anterior axillary line on the left. No thrills were felt and the murmurs were very faint. She suddenly collapsed and died soon after admission. Owing to a breakdown only the first lead of an electrocardiogram was obtained. This showed the P wave to be absent and the S wave very marked. The irregularity was very slight. (Fig. 1.)

FIG. 1.



Electrocardiogram Jan. 9th, 1926. Taken just before death. Lead I. only obtained. Auricular fibrillation and what would probably be right side preponderance present. There is slow rate and only slight irregularity; probably due to some heart-block.

### *Autopsy.*

The body was fairly well nourished. There was slight œdema of the ankles. The mediastinal tissues were œdematous. Both pleural sacs were obliterated by adhesions; those on the left were fairly soft, those on the right more dense. On both sides they were dense over the diaphragm. Rather long band-like adhesions lay between the right upper lobe and the pericardial sac. Both lungs showed brown induration and acute bronchitis and a good deal of œdema. The pericardial sac was adherent to the chest wall fairly tightly for about 4 inches to the left and 3 inches to the right of the mid-line. Both lungs were somewhat pushed aside by the heart. The greatest horizontal diameter of the heart as it lay in the chest was about 10 inches. The pericardial sac was thickened. Its cavity was obliterated everywhere by adhesions. These were fairly fine over the left ventricle and could be separated, but over the right ventricle they were very dense. The right border of the heart seen from the front was formed by the left auricle, which projected well to the right from behind the right auricle. At the back the pericardial sac was adherent to the adjacent structures in the posterior mediastinum. In the area in relation to the back of the left auricle it was densely adherent to the medial part of the right leaf of the diaphragm over an area about 3 inches square. The whole heart weighed 31½ oz.

On the whole, the shape of the heart, excluding the left ventricle, was globular. (Figs. 4 and 5.) The right auricle was much dilated and could hold about half a pint. This, and other measurements hereafter given, were made after fixing in formalin, so no doubt some shrinkage had taken place. The inferior vena cava at the point of its junction with the heart had an internal circumference of 3¼ inches. The tricuspid valve was much dilated, and its cusps were a little thickened. The right ventricle was much dilated and hypertrophied. The pulmonary artery had an internal circumference just above the valves of 3½ inches. The valves were large and competent. There were a few patches of atheroma in the main artery and the two branches. The left ventricle was hypertrophied. The wall near its middle was three-quarters of an inch thick, and tightly contracted. The aorta was small; the whole tube from the beginning throughout the arch only admitted a fairly large finger comfortably. Its internal circumference just above the valves was 2¼ inches. The valves were a little thickened but competent. The aorta was rather narrower at the closed ductus arteriosus than anywhere else; there were two areas of thickened intima here ¼ inch in diameter. The mitral valve showed marked stenosis. Its opening took the form of a slightly crescentic slit, just under an inch long. The flaps were fused and the chordæ tendineæ much thickened. The edges of the hole were so hard one could barely force a finger through.

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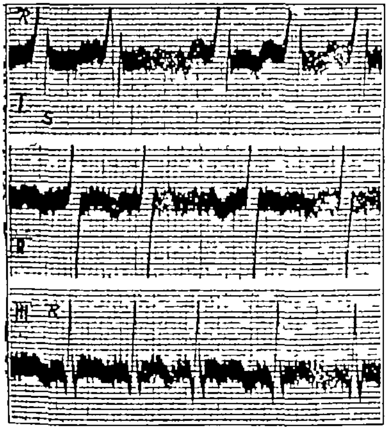
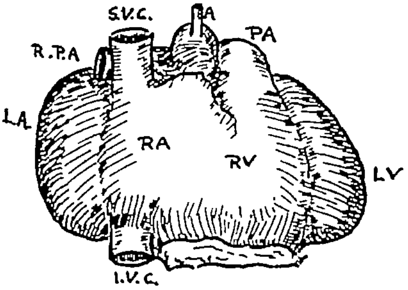
[1] Clinical Society Transactions, 1901, xxxiv., 183.
[2] THE LANCET, 1923, i., 591.
[3] THE LANCET, 1924, ii., 493.

FIG. 2.



*Electrocardiogram August 31st, 1920. Showing auricular* fibrillation and right side preponderance. This agreed very well with the relative sizes of the ventricles at autopsy.

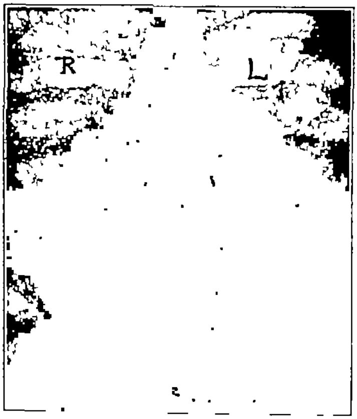
FIG. 4.



Heart. *Anterior view.*

The left auricle was enormously dilated. Its capacity was about one and a half pints. It was full of p.m. clot. The antero-posterior diameter was about the same as the vertical, the lateral was larger. The appendix was practically absorbed into this great chamber. The wall was everywhere very thin, and no muscle could be seen by the naked eye. The left pulmonary veins entered by three openings situated high up in the wall. The lower two were small. On the right side there were two veins, situated high up in the wall, the upper the larger. This huge left auricle passed to the right behind the right auricle which came to lie in front and on a rather higher plane. It completely filled up the arch of the aorta which passed over it and down behind and a little to the left of it. The dense adhesions between it and the right half of the diaphragm have been mentioned. The foramen ovale was quite closed. The bifurcation of the trachea was pressed on by the left auricle from below.

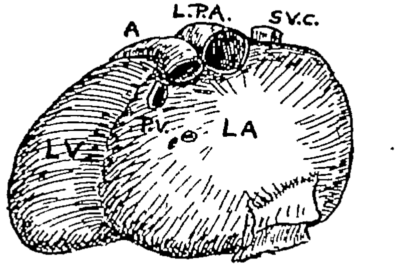
FIG. 3.



Skiagram taken in 1920.

As regards the rest of the organs the liver was of the typical "nutmeg" variety, weighing 8 lb. 10½ oz. There was a little free fluid in the peritoneal cavity. The spleen weighed 0 oz. and was firm and fibrous. The left kidney showed an old infarct in the lower pole and a recent one in the upper. There was no antemortem clot in the heart.

FIG. 5.



Heart. Posterior view.

Microscopical examination of the heart muscle showed the following changes. The left auricle showed a very thin band of muscle mixed with much fibrous tissue. On the pericardial side there were dense layers of fibrous tissue. In the left ventricle there were patches of fibrous tissue with a certain amount of round cell infiltration. These areas were most marked in the zone of fibrous tissue forming the pericardial adhesions. Similar fibrosis was found in the wall the right ventricle, and most of all in the wall of the auricle. Over the right ventricle an active ; process was still at work.

*Comments.*

The condition of the left auricle was not diagnosed in this case during life. In the three other cases referred to, the enlargement of the auricle in a transverse direction was more extensive than in this. It may cause dullness in the right axilla, and it has been tapped here and blood drawn on the suspicion that it was a pleural effusion. The physical signs of the condition, apart from the dullness to the right of the sternum, were not marked. They are characterised by the transmission of the thrill and murmur found at the apex to the right side of the chest. The clearness of these signs must depend upon the closeness of the contact of the left auricle with the chest wall. In this case the right auricle was the part of the heart in contact with the chest wall furthest to the right. The adhesions in the pleural sac in this case seem to have moored the front border of the right lung and so prevented its displacement in this area to any great degree. The left auricle projected well into the right pleural cavity, and formed the right border of the heart as one looked at it, but there was lung between it and the chest wall. The capacity of the auricle was the same as in Dr. Batty Shaw's case, but less than that of Dr. Emanuel, which was 40 oz. Pericardial adhesions have been present in all the cases described, either universally throughout the sac or locally over the left auricle. Mitral stenosis was present in three only; the other three did not show it, though there was evidently regurgitation. One may take it that the pericarditis in all these cases was accompanied by a severe myocarditis. The microscopical findings in my case give some idea of the widespread damage inflicted on the myocardium. Here and there in this case there were signs that the inflammatory process was still active. Perhaps the left auricle suffers exceptionally, and under the high intra-auricular pressure due to the lesion at the mitral valve gradually dilates to this remarkable size.

In mitral stenosis it is usual to find some degree of dilatation of the left auricle together with some attempt at hypertrophy. The state of the chamber at autopsy must depend on the pressure inside it during life, and the condition of the wall after the carditis which affected it along with the mitral valve and pericardium. The left auricle attains a greater degree of dilatation than any other chamber of the heart for three reasons—because it has thin walls, has no safety-valve into the great veins like the right auricle, and is being filled by both ventricles at once when there is mitral reflux.

When one first considers this great transverse enlargement of the left auricle it seems rather remarkable. In the slighter degrees of enlargement it extends backwards under the bifurcation of the trachea. It can readily be seen when the patient is screened in the right oblique position as a rounded shadow projecting backwards from the heart shadow into the retro-cardiac space. A little larger and it fills up the space under the arch of the aorta. Cases have been recorded in which it has pressed on and interfered with the function of the left recurrent laryngeal nerve. It may also press on the œsophagus. Very little enlargement takes place to the left. The arch of the aorta passes over the auricle, and then down, behind it, and a little to the left of it. The left ventricle lies in front and to the left of it, and is in all probability enlarged. It cannot, therefore, expand through the arch of the aorta to the left. The spine lies behind it, so it enlarges to the right and rather forwards. The right auricle then comes to lie in front of it and the right lung, if free, is easily displaced. A very great increase in size occurs of that small piece of the wall of the left auricle that lies between the root of the right lung and the inter-auricular septum a little to the front.

The lesser degrees of enlargement can only be detected by X ray examination in one of the oblique positions, preferably the right anterior oblique. probably quite extensive degrees of dilatation occur not infrequently and are not detected because they give no physical signs. If the shadow projects to the right of the heart, as seen in an antero-posterior view, it may escape recognition as being that of the left auricle unless the direction of its enlargement is borne in mind. It does not give its distinctive physical signs until it is right up against the chest wall. There is no doubt that oblique X ray examination is most helpful in cases of obscure cardiac enlargement.

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# TWO CASES OF NEOPLASMS OF THE MEDIASTINUM

## WITH UNUSUAL COMPLICATIONS.

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CASES of neoplasm of the lungs and mediastinum are probably a great deal more common than are generally supposed, but the unusual nature of the complications in the cases described below make their publication justifiable.

The first is a case of a secondary neoplasm of the mediastinum with an aspergillus infection.

A. L., male, aged 55, came complaining of pain in the knees. Was always healthy until 1917, when the right kidney was removed for hæmaturia and found to contain a hypernephroma. He was a master plumber and had never been concerned with the handling of grain or rope, nor had he kept canaries or other birds.

In December, 1921, he noticed that his knees commenced to creak, associated with gradually increasing pain. In April, 1922, he developed a severe dry cough with small repeated hæmoptyses, and had one or two night sweats. During the summer of 1922 he remained fairly well, but the cough and hæmoptysis persisted. His weight fell from 156 lb. (normal) in April to 136 lb. in December, 1922. In October, 1922, he had an attack of pleurisy in the right side.

When first seen on Oct. 25th, 1922, he had a dull earthy complexion, and teeth and tonsils were septic. Chest: antero-posterior diameter increased. Lungs, right: Movement diminished with slight local flattening at apex; percussion note dull second to sixth dorsal spines behind, impaired over the rest of the lung. Breath sounds broncho-vesicular over the upper half of the lung with increase of voice sounds, but air entry diminished, with a patch of bronchial breathing and bronchophony opposite the spine of the scapula. Coarse râles, increased on coughing, were audible over the upper half of the lung. Left: Note hyperresonant; a few coarse râles and prolonged expiration at the apex. Abdomen: An indefinite resistance was felt in the right kidney region. Sputum was repeatedly negative for tubercle bacilli. Wassermann reaction was negative. Radiography showed a large shadow in the posterior mediastinum; the right apex was opaque. The trachea was displaced to the right. A few days after examination he coughed up a body the size and shape of a small almond, followed by a similar piece a little later.

Microscopic section showed that the first consisted of fibrous tissue with a focus at one point from which the mycelium of a fungus was spreading; the second consisted entirely of fungus, the only normal tissue being a layer of striated muscle perforated by the fungus. A culture of the material showed a considerable growth of aspergillus fumigatus. Injection of this into a rabbit caused death from aspergillus pyæmia. Agglutination and complement-fixation tests on the patient for the aspergillus were both negative.

In November, 1922, he was admitted to St. Bartholomew's Hospital under Prof. F. R. Fraser, who has kindly allowed me to use his notes. The temperature and pulse were usually slightly raised. He was treated with large doses of potassium iodide without effect and later with X rays under which his weight increased to 148 lb. and he was generally improved.

He was discharged in January, 1923, and remained fairly well till March when he relapsed, was readmitted and died with signs and symptoms of acute bronchitis.

At post mortem the left pleura was not adherent, the left lung showed patchy broncho-pneumonia, especially at the base, and much emphysema. The right pleura was densely adherent and the lung showed broncho-pneumonia. The mediastinum was occupied by a mass of mottled greyish growth with considerable necrosis from which protruded into the left main bronchus two rounded firm masses. The left kidney was hypertrophied; the right was replaced by a mass of growth the size and shape of the kidney. No other secondary growth discovered. The nasal sinuses were unfortunately not examined. Section showed: Lungs, acute broncho-pneumonia; mediastinal mass and mass in right kidney showed the structure of a papillary carcinoma of the kidney; suprarenal, no evidence of growth. In none of these organs was there any trace of aspergillus fungus. By a process of exclusion it is nearly certain that the aspergillus coughed up must have come from the nasal sinus

I am greatly indebted to Dr. L. P. Garrod for the extensive pathological work.

A considerable number of cases of combined aspergillus infection and mediastinal neoplasm have been reported, but I cannot find records of any which have been so completely worked out from the pathological point of view. The disease is very rare in England, the majority of the cases recorded having occurred among the bird fanciers in Paris. The case is also of interest: (1) On account of the length of time, over four years, between the occurrence of the primary and secondary growth, as in this type the secondary growth nearly always occurs within three years of the primary. (2) On account of the markedly beneficial temporary result of X ray therapy; the patient gained 12 lb. in weight and his symptoms were much ameliorated.

The second case is one of a neoplasm of the mediastinum, possibly primary, but probably secondary, associated with tuberculosis of the lung

J. P., aged 42, labourer, complained of pain in the left side. Malaria 1919, dysentery 1908, otherwise healthy. Since 1920 had abdominal pain after food with flatulence and vomiting, but no hæmatemesis. In October, 1923, he commenced to cough and have acute pain in the left chest. The cough was at first *dry*, but *later he had a profuse* greenish expectoration, sometimes blood-stained. He commenced to lose weight, and his appetite began to fail. On examination on Oct. 15th, 1923, he looked ill, and had obviously lost weight; fingers slightly clubbed, teeth septic. He was dyspnœic and slightly hoarse. Lungs, right: Slight hyperresonance, otherwise normal; left, movement much diminished, especially at the base. Air entry practically absent over the middle third, and diminished over the remainder of the lung. Dull to percussion from the second rib in front, and from the spine of the scapula behind. Breath sounds faintly bronchial, a few medium râles scattered throughout the lung. At the extreme base the note was less impaired and the breath sounds were broncho-vesicular. Abdomen: Diffuse tenderness in the upper part. Larynx, arytenoids, and cords slightly inflamed, no ulceration, no paralysis. Radiography showed that the left diaphragm moved *slightly less than the right*; on the left side the middle third of the lung was obscured by a dense, but not quite uniform shadow, which also occupied the posterior mediastinum. The edges were not discrete, and there was haziness of the remainder of the lung. On the right side there was exaggeration of the normal striation. Sputum at first negative, afterwards repeatedly positive for tubercle bacillus. Wassermann reaction negative. Blood count showed a slight secondary anæmia.

He went rapidly downhill and died at the beginning of December with signs and symptoms of acute bronchitis.

A post-mortem was performed by Dr. W. A. Young, pathologist to the Royal Chest Hospital, to whom I am indebted for the following extracts from his report.

The right pleural cavity was free from adhesions. Left lung was completely adherent to chest wall. When left lung was being stripped the pleura was ruptured and about two pints of thin greenish yellow pus were evacuated from the lung, which, on section, was found to be a series of ragged, communicating cavities with thick fibrous walls covered with necrotic tissue. The upper lobe was invaded by a dense yellowish growth spreading from the mediastinum. Some separate nodules were found the size of small chestnuts in the upper lobe and some smaller subpleural nodules on the posterior surface of the lower lobe and on the ribs and vertebræ in association with them.

In the necrotic sides of some of the cavities and in the subpleural region a few areas suggesting *tubercle formation* were noted; but these were indefinite in the presence of so much necrosis and sepsis. The glands in the left hilum were completely infiltrated with growth and continuous with the mediastinal mass. The left bronchus was completely obliterated and occluded. The right bronchus and trachea showed ulceration, fibrinous exudation, and general congestion of their mucosæ. The right lung showed old scarring of the apex, terminal œdema, and no signs of active phthisis. The mediastinal mass appeared to be an agglomeration of malignantly infiltrating glands, surrounding large vessels, but not infiltrating them, the trachea, or the œsophagus. In the bifurcation, in the region of the left bronchus, and to the left of the trachea the greatest amount of growth occurred.

*No* enlarged glands found in the neck.

*Liver* extended two fingers breadth below costal margin; on section it showed passive congestion and cloudy swelling. A small nodule, the size of a small pea, was removed for section.

*Stomach.*—Much *dilated. At the pyloric end were* a few adhesions to the gall-bladder and to local peritoneal surfaces. At this place the wall felt thickened, and on opening the stomach an ulcer was found about the size of a five-shilling piece, immediately adjacent to the pylorus on its antero-superior *aspect. The margin of the ulcer* and the base were moderately thickened.

*Section.*—Examination of sections of the main tumour mass and various deposits showed the typical structure of a pavement-celled type of endothelioma.

In the *left lung*, along the growing edge of the tumour, small *processes of malignant* cells could be seen growing into the terminal bronchioles and alveoli, in some cases engulfing and surrounding catarrhal cells. The alveolar walls, which separate these processes, are apparently being slowly absorbed, as they are traced deeper into the tumour. In some sections the tumour is seen to be growing directly into *fibro-caseous tuberculous areas*, with typical tubercle systems with giant cells and the usual granulation tissue and surrounding broncho-pneumonic areas. In these tubercle systems Koch's bacilli were demonstrated adjacent to processes of malignant cells.

In the *thoracic glands everything from* early typical deposits to older degenerated, and in some cases fibrosed, deposits were found. In the liver was a small deposit of the same structure as the mediastinal mass, in association with early miliary tubercle in Glisson's capsule. One small tubercle system was found immediately adjacent to the *deposit* of growth.

Sections of the ulcer at the pyloric extremity of the stomach show chronic inflammatory fibrosis of the base and margin, fibrous tissue replacing the deep muscle layers. The epithelium at the edge of the ulcer shows simple degenerative changes alternating with *inflammatory hyperplasia* in the form of epithelial overgrowth and the formation of some solid columns of cells, which are suggestive of early malignancy. The granulation tissue was sparsely cellular in character, with a few areas of round-celled infiltration and the characteristics of tuberculous granulation tissue with increase *of endothelioid cells*, &c., but no tubercle systems were found. In the fibrous layers in the path of capillaries and lymphatics areas of marked endothelial proliferation were found. In several instances these areas contained cells which were sufficiently metaplastic strongly to suggest early malignancy.

From the pathological standpoint there are two points of marked interest in the case. (1) The association of an intrathoracic tumour *growing into the lung* with tubercle and the association of secondary deposits and miliary tubercle *of the liver*. The former has been reported on several occasions previously, but I can find no record of the previous demonstration of the growth actually invading the tuberculous tissue, and the occurrence of the secondary deposits of the growth associated with *miliary* tubercle of the liver also appears to be unique. (2) The possibility of a gastric origin for the intrathoracic tumour. This is a suggestion only.

Considering the two cases together they form an interesting commentary *on the fallacy* that may arise if too much stress is laid on the pathological findings. Both cases from the clinical point of view were fairly typical of intrathoracic neoplasms and the radiographic findings were greatly in favour of that, and the condition was confidently *diagnosed* prior to the reception of sputum reports.

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MEMORIAL TO DAME LOUISA ALDRICH-BLAKE.—A committee upon which the London School of Medicine for Women, the Elizabeth Garrett Anderson Hospital, and the Royal Free Hospital are represented, has decided upon the form of memorial to this distinguished surgeon. A travelling scholarship is to be endowed, open to women graduates from all the medical schools in the United Kingdom, and copies of Dame Louisa Aldrich-Blake's portrait by Sir William Orpen are to be hung in the Royal Free Hospital and the Elizabeth Garrett Anderson Hospital, at both of which she was consulting surgeon. Possibly, also, a bust may be erected in some public place

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

A meeting of this Subsection was held on June 9th, the chair being occupied by Mr. G. Grey Turner, the President, when a discussion on the

### *Value of the Closed Methods in Resection of the Colon*

was opened by Prof. John Fraser (Edinburgh). The operation of closed anastomosis of the colon was, he said, of interest, apart from the technique of the surgery, in that it represented a striving for an ideal. Since Halstead's paper, 32 methods had been described for effecting this anastomosis, a fact which showed that the ideal operation had not yet been reached. In dealing with statistics he did not include closed methods, and, excluding the surgery of the war, the mortality of anastomosis of the small intestine was 4·8 per cent., and in the anastomosis of small to large intestine it was 7·5 per cent. to 8 per cent. In anastomosis of the large intestine, when carried out without any additional procedure, such as Mikulicz's, or a combination of cæcostomy with anastomosis, the mortality was about 25 per cent. When, however, the operation was done in two stages, or when cæcostomy was added, the mortality fell to 12 per cent. There was, he declared, a large element of risk in doing primary suture of the large intestine, and it was of interest to inquire why there should be such a striking divergence between the mortality figures of small intestine anastomosis and those applying to the large intestine. It depended on the bowel wall. Beneath the endothelial layer of the peritoneum was the tunica propria, in which ran some lymphatics and fine blood-vessels, and this tunica possessed great defensive power against infection. If in an intussusception a small rent had passed unnoticed it might become the channel of infection to the gut. In the large intestine the tunica propria was often replaced by fat, and the stouter the individual the greater was this amount of fat. That entered largely into the question of the danger of suturing the large intestine. In the latter, too, the blood-vessels were comparatively scanty, and in the anterior mesenteric area the blood was not plentiful. In subjects of chronic obstruction the area above the seat of obstruction was more toxic than in a condition of health, and this could not be left out of account in assessing the risks. Moreover, the peristalsis in the large intestine was of a very powerful type, and this meant that the line of suture was liable to considerable mechanical strain.

### *The Edinburgh Technique.*

Prof. Fraser's first work in closed anastomosis was done on dogs, whose large intestine was difficult to deal with, it was very thick and resistant, its blood-supply was rather deficient, and, the dog being a meat eater, the intestinal flora was much the same as in man. A V-shaped incision was made in the mesentery, and when the blood-supply had been ligatured, strong clamps were put on and that portion was cut away. Then two needles were threaded with 00 catgut, and the ligature was passed through the eye of the guillotine on each segment of the bowel to remain. The ligature must run as close as possible to the crushing flap, which was important, as it made all the difference between success and failure. The clamps were removed, the ligatures tied, and the guillotines fastened to the closed end of each bowel. Probably the best type of stitch to use was Halstead's buttressing interrupted suture, and that was probably sufficient, but, in order to be on the side of safety, he usually added a thin continuous suture over the surface. Then the ligature was cut and released, the guillotines were slipped out, and there was no fear of infection. When the suture was completed care was taken to finish it carefully over the point at which the guillotine had been removed. It was essential to invaginate with the finger the line of suture so as to open it freely and completely. Prof. Fraser showed a number of slides of the operated areas at various intervals afterwards. Even in 36 hours the serous peritoneum had completed its junction over the periphery, and in 76 days it was almost impossible to see the outline of the junction; 54 animal experiments were done, and no deaths occurred. Before advising the routine use of this operation, he thought it should be more widely employed by those constantly engaged in abdominal work, as it was still comparatively untried. In the human subject he had done it in 14 cases, with one death, but others in Edinburgh had employed it without a death so far. The operation could be done very rapidly—in from 10 to 15 minutes—and in situations where any more specialised method would be very difficult.

### *The Dublin Technique.*

Mr. Seton S. Pringle (Dublin) described the closed method he employed, which varied in certain particulars from that of Prof. Fraser. As he progressed he had seen no reason to alter his technique. He was satisfied that it was a quick operation and that the risk of infection was much less than with the ordinary methods. He showed the clamps he used in the operation for crushing the bowel, the bowel being divided through the crushed portion and carbolic acid applied to the portion projecting beyond the forceps. The mesentery was united up to a short distance from the bowel, and when the ligature was tied there was a gutter of folded intestine. The intestine was then turned over and similarly treated on its other aspect, so that there was only a small area where the serous coats of the intestine were not in contact. The forceps were removed, and the small gap remaining was closed by a stitch. He had used the method in 14 cases, with two deaths, the first in a man in very poor general condition, with advanced carcinoma of the descending colon, adherent to the lateral abdominal wall and with a pericolic abscess. The other case who died was of great interest. It was that of a man, aged 68, who had a ring cancer of the pelvic colon. At first he made excellent progress; the wound healed by first intention and the bowels acted regularly. But on the tenth day he had a temperature of 102° F., and two days later it was evident that thrombosis of the left femoral vein had occurred. A blood culture taken on two occasions produced a non-identified member of the coli group. Death was from septicæmia on the thirty-second day. Apart from these two cases the results of the operation had been very pleasing to him, for the patients made a straightforward recovery and there were no signs of intra-abdominal infection, except that one developed a mild infection of the abdominal wall. In no case was there serious obstruction due to the formation of a shelf. By this method the mucous membrane was not seen or exposed, and one could place the sutures closer to the line of section of the intestine than if the gut had been enclosed by an encircling ligature. Twenty-three days after the operation X rays after a barium meal only just enabled the line of resection to be seen. Even when a shelf did form, Halstead had shown that if there was neither trauma nor sepsis the ridge rapidly unfolded. Schumacher recently told the speaker that he still did closed colectomy as a routine.

### *President's Remarks.*

Mr. Grey Turner said it was very likely there was much in the claims for speed and simplicity in regard to the closed operation, and it might result in an increase of the operability rate, but he questioned whether the case for a diminished mortality because of a lessened risk of sepsis had been made out. The cause of mortality after resection and anastomosis of the large bowel at the present day was not so much sepsis as some defect in the blood-supply of the part. In the immediate past much of the mortality was due to attempts made by surgeons to carry out resection and anastomosis of the bowel in the presence of a sodden and septic condition. Another cause was the selection of the wrong time for carrying the operation out. The great advancement in the matter of resection had been the preliminary treatment, which usually meant preliminary cæcostomy. In the cases he most regretted the trouble had been due to some defect in the blood-supply, which had been noticed. If he had any doubt on that point now he removed the clamps before commencing to assure himself, as far as he could by inspection, that there was an adequate blood-supply all round. If surgeons were wedded to the closed method, however, that could not be done. With great care as to details in the ordinary methods, he doubted whether sepsis was likely to be a common cause of failure. He agreed that the closed method enabled the anastomosis to be carried out with greater speed, though he doubted whether the saving in that respect would prove to be of any great importance. He would like to see either Prof. Fraser or Mr. Pringle carry out their method of colectomy in a big fat person, scarcely any part of whose peritoneum was visible. He considered catgut the ideal suturing material.

### *Discussion.*

Mr. P. Lockhart-Mummery said he had practised the closed method, but not that described by either of the opening speakers. He still believed that, save in exceptional circumstances, the open method was the better. The exceptions were the cases in which the growth was in a very inaccessible position, when, if the open method were chosen, the manipulations would have to be done in the abdominal cavity. With regard to the objections to the closed method, he did not include among these the formation of a spur, as that seldom occurred in actual practice. And the bringing together of mucous membrane was not important, as it closed in an extraordinary way. In his view the chief objection was that a large piece of bowel was crushed, and he had not satisfied himself that the juice which appeared as a result of the crushing was aseptic. A second objection was that the surgeon relied for hæmostasis on crushed vessels. He thought serious trouble from hæmorrhage was to be expected, as by this method there was no control of bleeding except by the crushing. The operation of crushing for piles was discarded because of secondary hæmorrhage. He preferred the method by which the bowel was simply stitched together. The factor which made for safety in the open operation was the preliminary or temporary cæcostomy, done at the same time. He had done practically all his cases by the open method, with temporary cæcostomy, and out of his last 20 cases so dealt with he had lost only one. The present smaller death-rate was largely due, he thought, to surgeons recognising the necessity of having a safety-valve above the line of union. He used the through-and-through stitch, locked every five stitches, then started the peritoneal stitch at the junction of gut and mesentery, and brought it straight down the gap on the inner side, leaving the gut at the outer side open, as he thought that one cause of trouble was that there might be hæmorrhage between the layers of the mesentery and that damaged the blood-supply. He admitted the advantage of the closed method when the open operation was not available.

Mr. Aslett Baldwin said the path of safety lay in doing a preliminary cæcostomy or colostomy, which he carried out through the right rectus. He had always done the open method of suture. He agreed with the President that the great risk was from sloughing of the bowel. It was important to make sure the bowel had got its proper blood-supply before suturing it.

Dr. F. J. McCann said he had operated on the colon a number of times for the removal of growths, &c., and he used the open method. He agreed with what the President said as to the manner of application of the sutures. He used one continuous suture, care being taken that the tissues had not been devascularised. He appreciated the great value of preliminary cæcostomy, which he believed to be of enormous influence in reducing mortality.

Mr. E. W. Sheaf (Guildford) said he had carried out Prof. Fraser's method in four cases. One case, a very severe one, died some days later of pneumonia, and at the post-mortem one could see no evidence of trouble in the transverse colon. He was much impressed with the value of the operation. By it one was better able to avoid contamination than by the open method.

Mr. H. O. Butler remarked that he had used Prof. Fraser's method in two cases, one of which was a failure probably due to the speaker's defective technique. He brought a specimen in which there was a very definite shelf, which formed after the operation, and only a moderate-sized probe would go through the opening.

Mr. Cecil Rowntree expressed his intention of using the closed method in future. Prof. Fraser's seemed to him the more *safe* of the two, and Mr. Pringle's the quicker. Animal experiments had played an important rôle in establishing this operation, and it was a pity there were not more opportunities taken to do experimentation in this country. Crushing he regarded as an efficient hæmostatic.

Mr. Ivor Back spoke of a case in which he carried out Prof. Fraser's method for resection of a carcinoma from the descending colon, without cæcostomy. The patient, a woman, passed a normal motion on the third day, but on the ninth day the temperature began to rise and she complained of pain. The temperature lasted two days, and as the abdomen became tumid he concluded there was leakage. He reopened the last inch of the incision and came upon a large abscess, which occupied the pelvis and contained thin fluid, which was obviously *B. coli*-infected. He inserted a tube and she recovered, the temperature coming down to normal. By testing with methylene-blue he found the urinary apparatus was involved, and it seemed clear that the abscess had infected a small part of the base of the bladder and set up a communication. For some days she passed urine both in the ordinary way and through the wound, then the wound closed and she made a complete recovery. He had been much impressed by the greatly increased facility with which the closed operation could be done in comparison with the open, and one was not impeded by the fear of having a contaminated field at the operation. He *also* agreed that crushing sufficed to produce hæmostasis.

Mr. W. B. Gabriel referred to a case of carcinoma of the hepatic flexure without obstruction, in which anastomosis was done by Mr. Pringle's method. Cæcostomy was not done, and the convalescence was uneventful, the patient leaving the hospital three weeks after the operation. He suggested that in the absence of obstruction cæcostomy could be dispensed with.

### *Reply.*

Mr. Pringle said he could not agree that sepsis was a negligible risk in the case of the open method of operation; there must be some soiling of hands and materials, and this was avoided by doing the closed operation. The possibility of the formation of a shelf must be borne in mind when operating and especially when suturing. Whenever he had his big crushing clamps with him he did the operation as a routine. He had not seen any trouble with metastasis.

Prof. Fraser said he had not abandoned the open method in his practice, but he considered that the closed form of operation had a great field. In the matter of speed of operation the closed method was infinitely to be preferred, as he could do it in five minutes. As to the President's remark that he would like to see the open method attempted on a fat colon, that was just the kind on which its greater safety was demonstrable. With regard to the possibility of shelf formation, he recognised that, but one layer of sutures would probably be found sufficient. In the human subject he had never seen bleeding after the operation. A shelf would be avoided by omitting cæcostomy.

## SECTION OF OTOLOGY.

THE summer meeting of this Section was held on June 4th and 5th, Mr. G. J. JENKINS, the President, occupying the chair.

The PRESIDENT read a paper, supplemented by a cinematograph demonstration, on

### *Cystic Serous Meningitis.*

He said that Bing, Bárány, and others had described cases in which there was an accumulation of subarachnoid fluid in relation to the anterior aspect of the cerebellum. In the two cases now put forward the symptoms and signs spoken of by Bárány could not be demonstrated, but the cases seemed to indicate that some such pathological conditions as those authors described did occur. Both patients had a history of chronic mastoiditis, an inflammatory process in the mastoid region, and of extensive operative treatment. The labyrinth was intact in both patients. Hysteria was very marked in both, but beneath this were indications of an organic lesion. The general debility, hysteria, giddiness, tinnitus, and headache came on gradually, and were long-standing symptoms before Mr. Jenkins saw the patients. They were in a desperate condition, and at first it seemed that nothing could be done for them. He then thought there might be a septic condition in the posterior fossa, behind the chronically inflamed mastoid region. Accordingly he incised the dura between the lateral sinuses and the labyrinth, and he found a considerable depth of subarachnoid space at a part where, usually, the cerebellum was in intimate contact with the dura, and there was a free flow of cerebro-spinal fluid in making the opening into that space. Both patients experienced relief of their symptoms within 24 hours of the operation. His object in reading the paper was to initiate a discussion on the possibility of accumulations occurring in front of the cerebellum.

Mr. LIONEL COLLEDGE spoke of a comparable case which he had seen in a girl aged 19. She had had a radical mastoid operation, but the cavity was soundly healed when he saw her. She also was hysterical, and had in fact been condemned as a hysterical subject. She complained of the same symptoms as did Mr. Jenkins's patients. The labyrinth seemed intact. She had a pronounced pointing error. He trephined through the occipital bone, the cerebellum bulged into the wound, and on displacing it backwards with the spatula there was a gush of cerebro-spinal fluid. The brain at once started pulsating, and the patient had immediate relief of her symptoms.

Mr. SYDNEY SCOTT said this condition might occur more frequently than was supposed, one reason cases might be missed being that the surgeon deliberately avoided puncturing septic cases. He mentioned the case of a man who had middle-ear suppuration for four and a half weeks, with a profuse discharge from the ear. On opening the mastoid Mr. Scott found the dura mater lying bare in the mastoid cavity, and in an almost sloughing condition. On passing in his finger to feel the boundaries of the area exposed between the labyrinth and the sigmoid sinus, his finger passed through into the cerebellar fossa, and there was a rapid flow of clear cerebro-spinal fluid. He thought there must have been an excessive effusion of cerebro-spinal fluid there, just as occurred in the knee-joint or in the pleural sac.

Dr. J. G. FORBES spoke of similar accumulations of cerebro-spinal fluid as a result of post-nasal or cerebro-spinal meningitis, and described a case of the kind.

Mr. F. W. WATKYN-THOMAS described a similar case, this patient also having had a mastoid operation. She had severe headache and giddiness, with a tendency to fall to the operated side, and a past-pointing error on the same side, with some nystagmus. The speaker thought it might be some pre-cerebellar condition, and Mr. Wyllie was about to operate when there occurred a sudden gush of clear fluid from the old operation cavity and a complete relief of the symptoms followed.

### *An Unrecorded Aqueduct in the Bird's Labyrinth.*

Dr. ALBERT A. GRAY (Glasgow) read a paper on an Aqueduct in the Bird's Labyrinth not previously recorded, and its evolutionary significance. He showed that this was a very short tube, of very fine calibre. It was present in the labyrinth of most species of birds. It was a fine canal, which ran through surrounding bone from the ampulla of the posterior canal to the recessus perilymphaticus. It was less frequently found in the more specialised birds, such as the singing varieties, and crows.

Dr. H. HARTRIDGE (Cambridge) read a paper on the

### *Fundamental Experiments on which the Resonance Theory is Based.*

He said the evidence on which the resonance theory of hearing was based was of a very diverse nature. He described, by means of the epidiascope, the ingenious apparatus by which he conducted his investigations on the subject. The question resolved itself into this: Does the ear possess the property of persistence of sound? It must if it contained resonators. And if it did, how could one hear an interruption in a musical tone? He argued that the ear certainly does show persistence of tone, and that the physical evidence he was able to submit fitted in with the physiological. The phenomena which took place in the ear could not occur unless there were in it suspensory discs of some kind, acting as resonators. He purposely did not enter into the question of where in the ear these were situated. He described and commented on the models of Ewald and of Wilkinson, and the deductions those authorities made from them, remarking that models did not behave exactly as did what they were made to represent, and the mere fact that Ewald's model was on a different scale to that of Wilkinson, and that different materials were employed, was sufficient to account for the divergent conclusions arrived at.

The subject was discussed in considerable detail by the PRESIDENT, Mr. SCOTT, Mr. G. WILKINSON, and Dr. GRAY, and Dr. HARTRIDGE replied.

A number of interesting cases were shown and discussed.

During the meeting Messrs. Allen and Hanburys, Messrs. Down Bros., Messrs. Meyer and Phelps, and the British Colloids Co. exhibited their products in the Barnes Hall.

## NORTH-WESTERN TUBERCULOSIS SOCIETY.

### *Tuberculosis of Joints.*

A MEETING of this Society was held at the Medical School of the University, Manchester, on June 4th, Dr. A. ADAMS presiding. Sir ROBERT JONES gave an address on this subject.

*Tuberculous Joints in Children.*—Sir Robert Jones said that tuberculosis of joints was chiefly a disease of children. Eighty per cent. of cases occurred between the ages of 2 and 14 years. When the disease occurred before that age it ran a grave course. The onset of disease corresponded to the activity of epiphyseal growth when the epiphyseal blood-supply was most abundant. It should be clearly emphasised that the disease was not hereditary. Heredity—in its Mendelian sense—dealt with unit characters transmitted through successive generations in accordance with definite laws. It was unthinkable in terms of heredity that a bacillus—like the tubercle bacillus—could be transferred in this sense, as it would have to be carried in sperm or ovum as a foreign body. If conveyed through the placenta the case would be taken from the hereditary class and placed in the congenital. Congenital transmission dealt with any infection which occurred to the fœtus from the moment of fœtalisation to birth. The cases of congenital tuberculosis were sufficiently rare to be of no practical importance. A tendency to the disease by way of increased susceptibility might be transmitted. Anything which diminished resistance predisposed to infection. Embryonic tissue had been proved by experiment to be very resistant to tuberculous attack. Tissues which could resist small doses of tubercle would succumb to large ones. The only absolute proof of the presence of tubercle in a joint consisted in the identification of the bacillus, inoculation of a guinea-pig, or the histological evidence. Specific tests, such as the von Pirquet, were of more value in their negative than in their positive reaction. Blood tests in spite of the investigations in regard to tuberculous antigens were of no practical value. Joints were attacked mainly by the bovine bacillus. Infection occurred chiefly through inhalation of infected dust finding its way to the blood stream via adenoid tissue, tonsils, and bronchial glands, or through the small intestine. Clinical evidence and experiments on tuberculous animals clearly established the exciting influence of trauma.

Sir Robert Jones discussed at length the significance of symptoms, describing the early and later deformities. The most significant symptom of activity was rigidity, with limitation of movement in all directions. If movement were found to be free in any one or more directions that was evidence that recovery had taken place. Paralysis occurred in association with only slight angulation and might be absent in very pronounced angulation It might recover with increasing angulation The paralysis was due to pressure from pachymeningitis, from epidural exudates, or from a collection of fluid debris. Recovery generally occurred in six months, although there might still be recovery from paralysis after many years. Operation was, therefore, rarely needed. In caries of the spine the bodies were affected, and laminectomy would dangerously weaken the spine In discussing treatment, emphasis was laid on the fact that the disease was a local manifestation of a general infection The aim of treatment was to improve resistance, protect the joints, and prevent deformity.

*Tuberculous Joints in Adults*—Tubercle in the adult, Sir Robert Jones said, was almost a different disease from tuberculosis in the child. It meant a prolonged convalescence—often years in duration—and resulted in a firm fibrous or bony ankylosis. The disease in adults was more prone to general dissemination, and in consequence the speaker recommended early operation to shorten the duration of disease. The aim of operation was to ankylose the joints. The duration of disease in this way was shortened to months rather than extended to years. In children operation was very rarely justifiable, and the days of excisions and erasions must be considered as passed. Patients were to be met with to this day who had flail and shortened limbs as the results of meddlesome surgery.

*Abscesses*—As to abscesses, attention was drawn to the fact that they were generally absorbed if left alone, and often became isolated and cut off from the original focus. An intra-articular abscess in this way became extra-articular. Aspiration did not hasten recovery, and this procedure was only needed if the abscess became very large and threatened to burst, or if invasion of micro-organisms suggestive of sepsis was suspected. If the abscess were benign, but threatened to burst under reddened skin, a very minute incision should be made at the thinnest part. Infection was more likely to take place if the incision were made through healthy tissues. Scraping of an abscess cavity and the use of drainage-tubes was emphatically condemned.

*Conservative treatment* should include fresh air and sunshine and complete rest and fixation of the joint. Deformities were the result of neglect or ignorance. They should be anticipated. Splints should be of a simple type. The hip should be kept extended and slightly abducted, the knee extended, the ankle at right angles, the shoulder abducted, the wrist dorsiflexed, and the elbow at right angles. Hospitals for children, excepting for acute cases, should not be tolerated in crowded cities. Heliotherapy had proved a most useful adjunct to outdoor life, but great care should be taken that in joint lesions no relaxation in regard to mechanical fixation should be allowed. Artificial light was advocated when the sun was not available. The signs of recovery were discussed and the methods of gradual diminution of mechanical fixation. A joint which increased its range of movement had recovered. If the range decreased, restraint was necessary. If an ankylosed joint altered in its angle during use it was essential to prevent movement.

The necessity of prolonged supervision of tuberculosis in a joint was emphasised. Ankylosis was fibrous, and fibrous tissue contracted for years, long after active tuberculous disease was ended. An angular flexion of spine could increase owing to the influence of gravity, and should be supported long after the disappearance of disease. This all meant continuity of treatment and efficient, skilled after-care. In conclusion, Sir Robert Jones demonstrated the use of splints and appliances.

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## BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

At a meeting of this Society held on June 3rd, Dr. E. Rivaz Hunt, the President, being in the chair, Mr. M. Fitzmaurice-Kelly read a paper on the

### *Cure of Hernia.*

In reviewing the progress made in the last quarter of a century, Mr. Fitzmaurice-Kelly remarked that the title of his paper represented an ideal to which we were now substantially attaining. One of the chief factors in the causation of recurrences, wound sepsis, was now practically abolished. The saccular theory of Hamilton Russell was discussed. Mr. Fitzmaurice-Kelly believed that though it accounted for many cases, it was not as universally true as its advocates claimed, and that, from the practical point of view, while there were many cases in which the sac was the cause of the hernia, and its removal was sufficient to effect a cure, there were many in which there was damage, either primary or secondary, to the abdominal walls, which called for some measures of plastic repair. Discussing the methods advocated, Mr. Fitzmaurice-Kelly thought that any method which sought to displace muscles by sutures was foredoomed to failure, and that such stitches did more harm than good. For a time, the method of filigree implantation had many advocates, and in many cases of ventral and umbilical hernia it had given good results; in large inguinal hernia the results were less certain, and any recurrence was very difficult to deal with. Further, wound infection was not uncommon and was fatal to success. Transplantation of patches of fibrous tissue was introduced to deal with cases, such as direct inguinal and ventral hernias, in which there was a defect of the abdominal wall to fill. The immediate results were good, but many recurrences were reported owing, it was said, to the absorption of the transplant. But this conclusion was traversed by Gallie, of Toronto, who showed by careful experiments that the union of the transplant to the edge of the defect was the weak spot. To meet this he devised the method of using his fibrous tissue transplants in strips, in the form of living sutures, thereby fixing them immovably to the margins of the defect to be filled. The application of this method to many varieties of hernia, especially to recurrences, and cases not amenable to other methods of operation, was described, and Mr. Fitzmaurice-Kelly claimed that since its introduction a large number of patients previously regarded as hopeless could now be cured, and that in all cases in which the removal of the sac was insufficient it was the method of choice. Particularly was this the case in old patients with direct hernias, and in this connexion the use of spinal analgesia and the consequent immunity from lung complications was important.

### *Discussion.*

The PRESIDENT asked whether it was necessary for the patient to lie up for a longer period after the living suture operation than after the more usual methods.—Mr. GEOFFREY BATE said he had originally been rather sceptical, but was now a convert to the method. He asked if any trouble was experienced with the wound in the thigh, and thought that many patients might object to such a large incision apart from the hernia wound.—Mr. H. N. FLETCHER mentioned Southey's method of silk implantation, and said that in umbilical hernia he had had very good results with Mayo's method of overlapping the aponeurosis. While the living suture method was probably the best for large ventral hernias, many of the slighter cases could be cured by layer to layer suture. He agreed as to the importance of spinal analgesia in preventing post-operative lung complications.

Mr. Fitzmaurice-Kelly, in reply, said that Gallie's researches showed that vascularisation of the graft was complete in three weeks, and there was no reason in these cases for a prolonged convalescence. He had had no symptoms referable to the thigh incision in any of his cases—in most, it was easy to suture the gap in the fascia, but when three or more lengths had been taken, the gap had been left open without any disability resulting. With regard to Mayo's operation for umbilical hernia, and many other of the older methods, it was certain that good results had been achieved. But all along the line the difference between the best surgery and the second best was represented by a small but constant percentage, and any method which gave a prospect of definite improvement in results should be adopted. Gallie's results in over 100 cases (mostly relapsed or rejected as unsuitable by others) so far showed no relapses, and this was a great advance on the results of any other method in similar cases. While not denying that the filigree method and Southey's method had rendered service, he thought the method of living sutures was sounder in principle and better in practice, and should supersede them.

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## EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on June 2nd, Mr. ALEXANDER MILES, Vice-President, being in the chair.

Dr. W. T. RITCHIE gave a communication on

*Paroxysmal Tachycardia,*

based on a study of 14 personal cases and of cases recorded in the recent literature on the subject. Of the personal cases, one was auricular, one nodal, eight ventricular, and four of undetermined origin. The general symptomatology and clinical signs having been described, details were given of illustrative cases. The longest paroxysm was one of ventricular origin in a man aged 29, who had been subject to paroxysms for 14 years; a final paroxysm at a rate of 237–240 was terminated by death on the ninth day. The longest paroxysm on record was one of 15 months' duration in a man aged 22. The frequency of paroxysms was most inconstant; they might occur at intervals of seconds, minutes, hours, days, or years. Paroxysms usually ended spontaneously. No method was known whereby paroxysms of nodal or ventricular origin might be arrested. Attempts to arrest auricular paroxysmal tachycardia met with more success, and such measures as deep breathing, holding the breath, drinking of cold water, straining while the glottis is closed, or firm compression of the abdomen succeeded in some cases. All these measures, if successful, probably acted as does ocular compression by reflex vagal stimulation. Dr. Ritchie held that direct compression of the right or left vagus in the neck was the most effective means of arresting auricular paroxysmal tachycardia. In diagnosis, paroxysmal auricular fibrillation could readily be excluded. It was not so easy to exclude auricular flutter. If vagal compression caused transient slowing of the ventricles, and if this effect passed off rapidly after the vagal compression had been relaxed, it was clear that the case was one of auricular flutter. If vagal compression caused the ventricular rate to fall suddenly to normal—e.g., from 160–180 to 80—and the latter rate was maintained after withdrawal of pressure from the vagus, the attack was undoubtedly one of auricular paroxysmal tachycardia. Electrocardiographic examination was, however, the most reliable means of establishing the diagnosis. The prognosis depended on the degree of integrity of the cardiac muscle and valves rather than on the rate and duration of the tachycardia. The risk attending the administration of digitalis and strophanthus appeared to be greatest in paroxysmal tachycardia of ventricular origin. Quinine and quinidine were probably of little therapeutic value in arresting paroxysms.

In the course of the discussion Dr. C. G. LAMBIE suggested the use of pilocarpine for the stimulation of the vagus, the advantage being that with this substance there was no increase of myocardial irritability.

Dr. A. R. GILCHRIST referred to the possibility of digitalis being a definite exciting cause of ventricular tachycardia and the danger of its use.

### *The Origin of Gall-stones.*

Prof. D. P. D. WILKIE stated that in years gone by the constant association of gall-stones and inflammation of the gall-bladder had led to the belief that catarrh was a necessary antecedent to stone formation. Modern study had shown that stones might exist without bacterial cause, and conversely inflammation might exist without stone. In the first type of case the usual stone was of the kind known as the "cholesterin solitaire," a large single stone of radiating structure, but with no lamellation. It was probably due either to an excess of cholesterin in the blood or to a disturbance of the bile acids holding the cholesterin of the bile in colloid solution. Whilst the single cholesterin stone might remain quiescent it was always possible that it might engage in the neck of the gall-bladder, thus giving rise to isolated afebrile attacks of colic. Infection was common in the gall-bladder, and in those organs thickened by chronic infection streptococci appeared with regularity even though the bile were sterile; the infection might come by the portal passages, the blood, or from some outside source, such as dental sepsis. In these cases there was great engorgement and thickening of the walls with symptoms of toxic absorption. The intimate connexion with the head of the pancreas nearly always gave rise to chronic inflammation at that site. Passing on to where stone and infection coexisted, Prof. Wilkie said that the former was probably the forerunner, impaction causing infection to take place followed by a secretion of mucus, which later became muco-pus. This might result in a mucocele of the organ, but more commonly the stone rolled back, re-entered, became mixed with the fragments of epithelium and muco-pus upon which cholesterin and bilirubin-calcium were deposited, and thus formed the nuclei of multiple stones septic in origin. At the same time a layer of pigment was deposited on the single stone forming the "combination stone.' At operation it was always necessary, no matter how many small stones existed, to search for and remove the large causal combination stone A primary cholecystitis was very apt to lead to calculus formation which might occur early or late by the same septic process, the swelling of the cystic duct shut off the gall bladder which filled with muco-pus, later when bile re-entered stones were formed Frequently at operations undertaken on account of symptoms which had led to the diagnosis of gall-stones, neither stone nor sign of inflammation was found These cases had been classified by John Berg into the two groups of muco-stasis and cholestasis, the former type of gall bladder being hypertonic, with mucoid contents, the latter being flaccid and filled with tarry bile, in both types stones were liable to form Westphal had attributed a functional cause to this condition, having proved that vagus stimulation causes spasm preventing the outflow of bile with biliary colic; this he called "hyperkinetic stasis." The reverse, "hypokinetic stasis, often took place in visceroptotic individuals. Here the gall bladder was thin walled and lax, often with pouching, this corresponded to the state of affairs produced by sympathetic stimulation In both these types stones might form later Biliary symptoms disappeared after the removal of the organ Considerable light was thrown on the origin of the numerous symptoms of gall bladder disease by study of the pathology and nerve-supply of the organ; the connexions of the nerve-supply accounted for the girdle pain, diaphragmatic arrest, and gastric flatulence The great absorptive power of the gall bladder explained not only its power of recovery, but also the acute systemic toxæmia in an acute attack and the slow poisoning in long-standing cases. Further, this absorptive power shielded the liver from bile pressure where the common duct was blocked, the same power was made use of in radiographic work. Gall-stones might be passed in relatively small numbers, but the gall bladder could never be cleared, nor could stones be dissolved in vivo Thus the only treatment was surgical This should be conservative so far as was permitted by the pathological state

Mr HENRY WADE, Dr FERGUS HEWAT Dr KEPPIE PATERSON and others joined in the discussion which in the main centred on the question of operation in cases of gall bladder trouble, whether it was preferable to operate early or to put the patient on diet and other treatment in the hope of the attack subsiding and the condition remaining quiescent.

Mr J W STRUTHERS demonstrated two specimens of intramesenteric diverticula from the small intestine occurring in cases upon which he had operated He described the cases and illustrated them by lantern slides. He said that these diverticula might give rise to acute conditions in the abdomen and their presence could easily be missed They were connected with the intestine by a minute canal which might become obliterated with the formation of a cyst

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## ABERDEEN MEDICO CHIRURGICAL SOCIETY

A MEETING of this Society was held recently, Dr J CROMBIE, the President, being in the chair

Dr J CRAIG read a paper on

### *Acute Rheumatism in Childhood*

He said that the term rheumatism was unfortunate, but that we could now pick out a definite entity, a disease that works by successive recrudescences and reinfections and produces clearly defined clinical pictures. This condition was now called acute rheumatism, and was a general disease that had four chief manifestations: (1) carditis—when the heart is mainly affected, (2) arthritis—when the joints are affected, (3) chorea—when the brain is affected, and (4) subcutaneous nodules—when the subcutaneous tissues are involved These four chief phenomena, as one might expect in a general infection, often occurred together and in the young Invasion of the body by this disease was synonymous with invasion of the heart Many series of statistics could be given to show the seriousness of the problem. In 1925 13 5 per cent. of medical admissions to the Royal Aberdeen Hospital for Sick Children were cases of active rheumatism Those cases occupied beds for long periods, and the strain on the hospital accommodation was very great. Dr Craig discussed the ætiology of the disease in detail It was a disease of childhood, a little more frequent in girls than in boys, and more common in urban districts and in the artisan and labouring classes. The problem of the exciting cause was unsolved, and in his own opinion the real causal organism had not yet been found The essential pathology of the disease was one of focal nodules disseminated in the fibrous structures of the body In the heart these nodules were found specially about the central fibrous body He exhibited anatomical specimens showing this body and its intimate relationship to the valves. The mitral valve was clinically the one most affected, but the aortic valve was found to be more frequently involved than was clinically obvious. Stress was laid on the fact that the substance of the valve was affected—a valvulitis rather than a simple endocarditis In all the other parts affected the same nodules were to be found No special type of child was found to be the subject of rheumatism in Aberdeen The children were often nervous children but this nervousness might be due to the disease itself The symptoms were often vague, but the combination of pallor, languor, and wasting was suggestive The pyrexia, though often present at the onset of the active phase, was not a striking symptom Dr Craig dealt with the signs of carditis in some detail, and discussed the significance of an accentuated second pulmonary sound, of the so called reduplication of the second sound at the apex, and of mitral diastolic murmurs. Acute dilatation of the heart was the typical condition, and in Dr Craig's opinion pulse-rate charts were far more important than temperature charts. Subcutaneous nodules were found to be not uncommon in Aberdeen, 5 out of 30 cases showed them All the cases with nodules had marked involvement of the heart, and these nodules must be searched for, as they caused no pain and no symptoms; tonsillitis was common in Dr Craig's cases, but the rôle of the tonsil in rheumatism was somewhat difficult to define. Finally, the treatment was summarised. All the treatment centred on saving the heart, rest and patience being the most important factors. The length of the period of rest in bed was difficult to state generally, but it should be at least six months. *Homes for treating cases during convalescence* were required as accommodation for long periods could not be found in hospitals. The child should be kept at rest so long as the pulse-rate was falling and had not reached normal. So long as a recent mitral diastolic murmur was present the child should be kept in bed The child should be at rest so long as the physical signs were changing The child should gain in weight and in colour, and should have a healthy appearance, and when the child was allowed to get up the return to normal life should be gradual. At each progressive stage the effect of graduated exercise on the heart and pulse-rate should be noted In most cases, in Dr Craig's opinion removal of the tonsils and adenoids was necessary, but the removal had little effect on the rheumatism itself He held that the use of salicylates in treatment had been somewhat overrated

In a discussion which followed Dr WILLIAM BROWN, Prof ASHLEY MACKINTOSH, Prof R J MCKERRON, Dr J F. CHRISTIE, Dr A G ANDERSON, and Dr H R SOUPER took part.

# GENERAL MEDICAL COUNCIL.

*(Continued from p. 1150.)*

## REPORTS OF COMMITTEES AND OTHER BUSINESS.

### Executive Committee.

#### *Medical Reciprocity: Provinces of Saskatchewan and New Brunswick.*

*Saskatchewan.*—At the meeting of the Executive Committee in February last it was resolved to ask the Privy Council to take steps to rescind an order in Council which established medical reciprocity between Great Britain and the Province of Saskatchewan. A subsequent correspondence between the College of Physicians and Surgeons of Saskatchewan and the Registrar of the General Medical Council was read, but the position remains unaltered. The offer on the part of Saskatchewan to accept British practitioners registered in Great Britain if similar acceptance was granted to the diplomates of the Saskatchewan College was pointed out to be inequitable, because it would mean that, whereas a person registered in Saskatchewan and in the United Kingdom could practise, for instance, in Australia or in Italy, an Australian or an Italian, registered in the United Kingdom, could not practise in Saskatchewan. It was indicated that a reciprocal arrangement with the Dominion Council might get over the difficulty, but the Registrar of the Saskatchewan College wrote that the constitution and duties of the Dominion Council would not make this possible, while it could not be admitted that the General Medical Council should have any jurisdiction in the matter of arranging reciprocity between Saskatchewan and foreign countries.

*New Brunswick.*—A communication was made also to the Privy Council to point out that a decision communicated from New Brunswick on the matter of reciprocity represents the final conclusion of the Provincial Council, and that reciprocity has therefore ceased.

#### *Indian Universities.*

Colonel Needham made an oral report in regard to the present position of medical education in India, when the Committee resolved in the cases of the Universities of Bombay, Lucknow, and Punjab as follows:—

> "*That the recognition* of the degrees of M.B., B.S. granted until June, 1926, be continued until June, 1927, on the same conditions as before—viz., the receipt of a satisfactory report from an official inspector approved by the Council, stating that all the regulations of the Council are being fulfilled; and subject to the further condition that a statement be forwarded to the Council signed by the Dean of the Faculty of Medicine, containing a nominal roll of the medical graduates of the year, and a certificate also signed by him to the effect that each of them had fulfilled the regulations of the Council."

Communications were received from the Government of Bihar and Orissa forwarding an application from Patna University for the recognition of its degrees of M.B. and B.S. and enclosing the regulations of the University. These were referred to the Education Committee.

#### *Burma Medical Council and Medical "Cults."*

The Registrar of the Burma Medical Council desired guidance as to the recognition of the ethics of adding to the initials of medical degrees or diplomas letters signifying practice in homœopathy, osteopathy, chiropathy, psychotherapy, electrotherapy, and other "cults." It was pointed out that unregistered practitioners of "cults" have no legal status in this country, though there is nothing to prevent any registered practitioner from pursuing any theory of medicine in which he honestly believes, and nothing to inhibit a registered practitioner from consulting with any other person whose name appears on the Register, merely because the latter has adopted a special theory of medicine or surgery, such as homœopathy or osteopathy. As the additional letters were to be used on door-plates or otherwise in pursuit of publicity a note of warning was added.

#### *The Indian Medical Council.*

A copy of a Bill which has been introduced into the Indian Legislative Assembly and Council of State to "regulate medical education in India" was received.

#### *Dental Education and Examination.*

A report was received through Sir James Hodsdon, chairman of the Committee of Dental Education and Examination, on the observations of the statutory bodies concerned in regard to a previous report on the inspection of the qualifying examinations in dentistry and dental surgery. At the May session, 1925, a report on this subject from the Dental Education and Examination Committee was approved by the Council, who recommended that copies should be forwarded to the licensing bodies, together with the following resolutions, of the Council on Dental Examinations, when the bodies were asked for observations:—

1. That every subject included in the curriculum should form the subject of a written and oral or practical examination.
2. That two examiners should always participate in the oral or practical examinations of a candidate.
3. That whatever may be the system of marking, the percentage for a pass in each subject should not be less than 50 per cent.
4. That it is desirable that, where possible, the practical operative examination in clinical subjects should be conducted on the living subject, and should include dental prosthetics and orthodontia.
5. That it is desirable that, where possible, candidates should be tested in the administration of general anæsthetics in common use in dental practice, and should be required to perform extractions.
6. That the dental subjects of the Final Examination should be passed at one time.
7. That in the regulations for the several examinations it should be provided that examiners in assessing marks should be empowered to take into account the duly attested records of work done by the candidate throughout his course of study in the subjects of examination.
8. That a candidate remitted in any subject of a professional examination should before he is readmitted to examination therein be required to produce satisfactory evidence that he has, during the interval of remission, pursued, at a recognised medical school or dental hospital, the study of the subject in which he was rejected.
9. The candidates who obtain less than 30 per cent. of the marks in any subject should be remitted for a longer period than three months for further study in that subject.

At the November session, 1925, these observations were submitted and the following may be noted.

With regard to resolution 1—

At the University of Liverpool a paper in medicine is now included in the Final Examination for the Licence. At the Universities of Birmingham and Bristol and the Royal College of Surgeons of England courses of instruction in medicine are compulsory, but medicine is not a separate subject of examination in the Final Examination for the Licence.

With regard to resolution 5—

The University of Birmingham has adopted a recommendation "that candidates at the Final Examination for the Licence in Dental Surgery should be expected to administer nitrous oxide gas under the supervision of a qualified medical man, and to perform extractions under nitrous oxide gas or any other general anæsthetic."

The University of Dublin agrees with the remarks of the Royal College of Surgeons of England regarding the suggestion that candidates under examination should be called upon to administer anæsthetics to patients.

The Royal College of Surgeons of England states that "It is the practice of the examiners to ask questions relating to the administration of anæsthetics, of those candidates who are called upon to perform extractions under anæsthetics, and in the opinion of the Board it is not desirable to extend this part of the examination."

The University of Liverpool "does not approve of the suggestion that candidates under examination should be required to administer anæsthetics or to perform extractions for patients."

The Victoria University of Manchester considers the suggestions contained in the resolution (5) "to be neither practicable nor desirable."

At the National University of Ireland, Dublin, "students are not required themselves to administer *general* anæsthetics at the examination"

With regard to resolution 6—

The Victoria University of Manchester now requires that the dental subjects of the Final Examination be passed at one time.

From the replies received it appeared that the resolutions of the Council on dental examinations were enforced in the majority of cases

### FINANCE COMMITTEE.

The report of the Finance Committee was presented by Sir Holburt Waring, the Chairman. The report showed that the income of the General and Branch Councils for the year ending Dec. 31st, 1925, was £18,114 15s 9d The expenditure during the year was £12,189 3s 5d Consequently there was a surplus of £5925 12s 4d. The income was £127 less than in 1924, partly due to a reduction of £235 in the amount received for colonial and foreign registration fees, a source of income likely to be smaller in the future, and partly to an income-tax charge which is under consideration The receipts of the branches for registration fees show an increase in England of £437, a decrease in Scotland of £1010; and in Ireland of £30 The total number of registrations was 2500 as against 2706 The maximum has, therefore, obviously been reached and a considerable reduction may be looked for in the current year, and for some years to come.

The expenditure of the Council shows an increase of £1315, almost the whole of which is due to the fact that both sessions were prolonged, and they extended together over 13 days as against an average for the past five years of nine days. Besides this, the General Council had to break up over Whitsuntide, 1925, and reassemble, with the result that the fees of the Council show an increase of £720; printing of programmes, &c., an increase of £145; law expenses an increase of £244; and miscellaneous expenses an increase of £152 Against this increase there was a saving of £121 in fees paid to the Executive Committee, as there was no meeting in July Salaries show a reduction of £95 owing to changes in the staff, and house expenses of £94, due to a reduction in gas, electric light, &c.

The assets are increased by the surplus obtained by each of the branches—viz, England, £3960, Scotland, £1810, and Ireland, £612 The surplus of £5925 is £1258 less than in 1924 It is expected that the income of the General Council and branches will exceed the expenditure during the current year, but it is not likely that there will be a large surplus

The question of certain liabilities of the Council under schedules A and D has been listed for hearing by the Special Commissioners in July

### PHARMACOPŒIA COMMITTEE.

The report of this Committee was submitted by Sir Donald MacAlister, the Chairman The number of copies of the British Pharmacopœia, 1914, which was sold by the publishers between Nov 23rd, 1925, and May 28th, 1926, was 1080 copies. The number sold in the year ending May 28th, 1926, was 2384 This number is again greater than that for the preceding year The total number sold since the date of publication was 51 901 The stock remaining in the publishers' hands is 2031 copies.

The conference sanctioned by the Council on Nov 30th, 1925, was duly held on Feb 23rd 1926 There were present 23 delegates from the following medical, pharmaceutical, and scientific societies and bodies—namely: The Ministry of Health the Royal Society, the Royal Society of Medicine the Medical Research Council, the British Medical Association, the Physiological Society, the Chemical Society, the Linnean Society, the Pharmaceutical Society of Great Britain the Pharmaceutical Society of Ireland, the Pharmaceutical Society of Northern Ireland, the Society of Public Analysts. Opinions and criticisms were freely expressed on a number of points both of principle and of detail, and large questions were raised, such as the general organisation of expert committees of reference, the delegation of the Council's statutory powers and duties, the adaptation of the Pharmacopœia to Indian and Dominion requirements, and its relation to international and other agreements, and to therapeutic and pharmaceutical research On March 19th the Pharmacopœia Committee held a special meeting to consider the questions raised at the conference, and others bearing on the subject of the preparation of the next Pharmacopœia, and came to the conclusion that for the full elucidation of these questions it was expedient that an authoritative inquiry should be held, at which evidence of various kinds should be invited, and information not now in the possession of the Committee should be obtained

The Committee accordingly recommend in their report —

> "That the General Medical Council request the Lord President of the Privy Council to take steps for the appointment of a suitable committee, including members of the Council, empowered to make inquiries, to collect information, to receive evidence, and to make recommendations on the question whether it is desirable to make any, and if so what, alterations in the existing law or practice relating to the preparation or publication of the British Pharmacopœia and to its adaptation to the requirements of the British Empire"

### EDUCATION COMMITTEE

Dr J Y Mackay, the Chairman, placed the report of this Committee before the Council He said that it was long and required careful study It consisted mainly of the replies of the various licensing bodies to the inquiries circulated by the Committee concerning the steps which each body had taken to readjust its medical curriculum in accordance with the resolutions of the Council which came into force on Jan 1st, 1923, and the Committee recommended that it should be circulated to all these bodies for their mutual information

Dr H B Brackenbury, a member of the Committee, said that the matter was important, as many public authorities who carried out health services had complained that they could not find a number of sufficiently skilled private practitioners to assist them, especially in orthopædic work, in the treatment of diseases of the eye, and in certain aspects of children's diseases. Education authorities were establishing an increasing number of orthopædic clinics for their children and it often happened that one complained that no private practitioner in its neighbourhood was capable of doing the work If the Council, however, could say that the medical profession could supply a sufficient number of these practitioners it would not be necessary for local authorities to employ unqualified persons. There were two *difficulties* the first was that since the new curricula had only come into force on Jan. 1st, 1923, they had not yet had time to produce a practical effect on the body of the profession. The other was that the Education Committee had no power to inspect courses of instruction but only to visit at the time of the final examination and to see that proper questions were put The public demand for practitioners trained in these branches of medicine was very urgent and there must be no loss of time in meeting it, and although these matters might be trivial compared to some of the other work of the Council they were nevertheless important The Committee therefore relied on circulating their report to all licensing bodies to make those who fell short of the required standards realise their deficiencies The Council should also see what arrangements they could make to supervise training, as no time should be lost in making known to public authorities that students were actually being taught the curricula that the Council had laid down

Dr H H. Littlejohn, another member of the Committee, desired to dissociate himself entirely from the views of the previous speaker He said that licensing bodies were loyally carrying out the resolutions of 1922.

The President remarked that since many teaching bodies had anticipated these requirements of the General Medical Council a large number of sufficiently skilled practitioners was already available.

Sir W. L. Mackenzie said that in Scotland the Scottish Board of Health, which was the central authority with control over medical examination and inspection of school-children, of child welfare, of everything pertaining to tuberculosis, venereal disease, and the general public health, had never had any difficulty in the last 25 years in getting the class of young men and women that they wanted.

Dr. Brackenbury explained that although some authorities alleged that they could not find sufficiently skilled people he did not think that their allegations were well founded, but the Council should take care that they never became well founded.

Dr. Littlejohn agreed with Dr. Brackenbury's views as amended.

The Council resolved to accept the report unanimously and to circulate it to the licensing bodies.

### EXAMINATION COMMITTEE.

Sir Norman Walker, the Chairman of the Committee, submitted his report. Referring to the charts of passes all over the country he noted that the post-war crest had been passed in Scotland and Ireland, the returns in 1925 showing an abrupt drop. In England, however, the number (1246) was the highest ever reached, and he expected the drop to come this year. All the examinations in anatomy and physiology except that of the University of Wales have been visited. The results of the visitation had shown, said the report, that the Council might be satisfied that students were being properly examined. Licensing bodies differed slightly in their methods of examination in anatomy and physiology, but all satisfied the Council's requirements that these two subjects should be studied together and thoroughly understood together. The Committee, when visiting licensing bodies, had everywhere been received with the warmest cordiality, an eloquent answer to those who had predicted that the bodies would resent their interference. Everyone had been most anxious to show them everything that they could possibly wish to see.

The report of the Examination Committee was adopted, together with the following two recommendations:—

1. That the previous recommendation of the Committee adopted by the Council on June 2nd, 1920—viz.: That the licensing bodies which have not hitherto supplied in their annual return information as to whether they do or do not examine in operative surgery, ophthalmology, and mental disease be asked to do so in future—having served its purpose be discontinued.

2. That the Examination Committee be authorised to arrange for the visitation of the examinations in pathology and materia medica and pharmacology.

### PUBLIC HEALTH COMMITTEE.

Sir John Moore, the Chairman of the Committee, presented his report, which was adopted. He noted that the number of entrants for both parts of the examination had dropped from 465 and 456 in 1924 to 268 and 234 in 1925, by reason of the more rigid conditions which had come into force on Jan. 1st, 1924. It was gratifying that only five applications for exemption had been reported in 1925.

### DENTAL EDUCATION AND EXAMINATION COMMITTEE.

The report of this Committee was submitted by the Chairman, Sir James Hodsdon, and contained the observations of the licensing bodies in regard to a previous report of the Committee on the inspection of the qualifying examinations in dentistry and dental surgery. This report, together with certain resolutions of the Council on dental examinations, had been circulated to the bodies whose replies formed an appendix, giving a general view of the position of education along the special lines.

# Reviews and Notices of Books.

### MUSCULAR ACTIVITY.

By ARCHIBALD VIVIAN HILL, M.A., Sc.D., F.R.S., Professor of Physiology, University College, London. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. Pp. 115. 12*s.* 6*d.*

THE brilliance of any piece of research is displayed not only in the intensity and penetration of the light which it sheds into poorly illuminated zones, but in the continuity of ideas pervading it and the rigidity of the experimental proof supplied. The fascinating logbook which Prof. A. V. Hill has given us as the result of his cruise through seas for the most part unexplored and uncharted, has all these qualities in high degree. It consists of a course of lectures delivered by him in Baltimore in 1924, being the sixteenth course of Herter lectures. The first lecture deals with the dynamics of muscular activity. Here we learn that isolated muscle cannot be regarded simply as an elastic system, since the external work done when the muscle is allowed to contract against an inertia lever depends on the speed of shortening. Human muscle presents the same phenomenon, there being an optimum speed of shortening for each group of muscles, "a speed which everyday experience and common sense have led us to adopt in our ordinary working life." The system is, therefore, a visco-elastic one, and some of the visco-elastic properties of stimulated muscle have actually been reproduced by means of a simple model. One interesting and fundamental fact, which has been demonstrated on frog's isolated muscle, is that the tension of a stimulated muscle, when allowed suddenly to shorten, falls to zero and then reappears along a time course similar to that of the original development of tension. The fact that the degree of fall varies directly with the speed of shortening pointed to the subsequent redevelopment of tension, and hence presumably the original development of tension, as being determined by the visco-elastic properties of muscle. The true mechanical response is, therefore, probably much more rapid than the hysteresis curve to which we usually apply that term.

In the second lecture an account is given of the heat production of muscle under anaerobic and aerobic conditions. The delicacy of the recording apparatus, and the accuracy with which records of the time course of the heat production may be analysed, give us the only index at present available of the intermediate steps in that mechanism which is externally manifested in contraction and relaxation. These thermodynamic results, as Prof. Hill says elsewhere, provide a sketch only of the sequence of events; the completion of the drawing will rest with the chemists. Early experiments showed that the recovery heat production—i.e., the heat produced during the oxidative removal of some of the lactic acid formed in the initial stages of contraction, maintenance, and relaxation—was approximately equivalent to the initial heat; and since the oxidative removal of a given quantity of lactic acid would produce seven times the amount of heat that its production involved, it was clear that only a fraction of the lactic acid produced could disappear in this way. This fundamental conclusion, reached purely from myothermic experiments, has since been amply confirmed by Meyerhof's chemical analyses. Furthermore, the initial heat is absolutely independent of the presence or absence of oxygen. The lecture closes with a general account of the work of W. O. Fenn, one of Prof. Hill's distinguished pupils. We learn here that even an isolated muscle can, so to speak, feel the amount of work to be done required of it, and that the excess liberation of energy when a muscle is lifting a weight, over and above that liberated by an isometric contraction at the same initial length, is approximately equivalent to the external work done, "a fact which is very difficult to reconcile with the simple elastic body theory."

In the third lecture an account is given of the chemical changes accompanying muscular activity both in the absence and in the presence of oxygen. In the former case no changes other than the accumulation of lactic acid and its neutralisation have been discovered, and the absolute, and one might almost say uncanny, agreement between the observed heat of formation of sodium lactate from glycogen and base, and the heat formed when the same amount of lactate appears in muscle, is brought forward as an almost certain argument that other chemical changes are non-existent. The lecture proceeds with a description of the chemical changes occurring in aerobic contraction, and again the myothermic measurements are found to tally exactly with the energy exchange of the chemical events occurring under these conditions. A fascinating picture is drawn of the release of energy during short and prolonged stimuli, a picture which explains how the heat production of a single twitch is greater at a low than at a high temperature, whilst in a prolonged contraction the temperature coefficient of the energy liberation is positive. A fascinating calculation which shows that the surface tension theory of contraction cannot explain the large tension developed by the comparatively small amounts of lactic acid produced, brings the third lecture to a close.

In the fourth lecture we are given an account of the recovery process after muscular exercise in man. The facts discovered as a result of experiments on frog's isolated muscle are found to apply unreservedly to the case of man. We see how enormous may be the amount of lactic acid accumulated before exhaustion is complete, how the excess $CO_2$ liberated during and immediately following severe exercise is a measure of the lactic acid produced, and how the ratio of this to the oxygen used in recovery is a measure of the efficiency of removal of lactic acid, and therefore of the degree to which severe exercise may be sustained. The respiratory quotient of the excess metabolism of muscular exercise is found to be unity, just as in the case of frog's muscle. A striking calculation of the circulation rate from the oxygen intake during severe muscular exercise gives a figure as large as 8¼ gallons of blood per minute! And in order to perform this amount of work the heart would probably require 800 c.cm. oxygen per minute. From calculations such as these Prof. Hill suggests that "a deciding factor in the capacity of a man for severe prolonged exercise may often be the efficiency of his coronary circulation." The general medical public may not have had a very clear conception of the fundamental facts about muscular activity which Prof. Hill and his colleagues have demonstrated. The complete outline of the subject has been lucidly condensed into this volume, with many helpful analogies, and all are now in a position to appreciate the real knowledge that has been gained.

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ANATOMY.

*Anatomie Medico-Chirurgicale.* By PHILIPPE BELLOCQ. Fasc. I, Le Crâne. Paris: Masson et Cie. 1925. Pp. 92. Fr.18.

Dr. Bellocq's treatise has the freshness of outlook and vitality of description usually to be found in the works of French anatomists. The book, which is apparently a series of lectures collated by Dr. A. Weiss and arranged by the author, bears the impress of its origin in the plan of treatment and in other ways. This volume deals with the head, excluding the central nervous system, and contains all the information anyone is likely to want on the structures found in this region. It is not a work on applied anatomy, but rather comes under the indefinite heading "medico-surgical" given to it on the title-page; it is difficult to draw a distinction between this and ordinary descriptive anatomy, unless the personal predilections of individuals are taken as standards of judgment; for surely a few references here and there to the bearing of certain facts on clinical matters do not afford sufficient ground for such a distinction. However this may be, Dr. Bellocq has produced a readable and interesting book, and we can look forward with pleasurable anticipation to the further issues of the series.

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*Étude Anatomique des Artères de la Peau chez l'Homme.* By Mdme. PHILIPPE BELLOCQ. Paris: Masson et Cie. 1925. Pp. 63. Fr.12.

THIS is a summary of the results of radiographic observations on the cutaneous arterial supply. The subject is one which is only known from a general point of view, and a work such as this will find a place in anatomical records, and doubtless also in clinical regard. Madame Bellocq has shown how the arterial supply to various parts of the surface varies with age, and under certain mechanical conditions, and has classified the types which she has found and described. This little book is well worth reading.

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*The Vertebrate Skeleton from the Developmental Standpoint.* By J. S. KINGSLEY, Emeritus Professor of Zoology in the University of Illinois. London: John Murray. 1926. Pp. 337. 21s.

AN excellent and authoritative account of the skeleton throughout the vertebrate phylum. The author bases his descriptions on the sound foundation of embryology, for, as he says, "only by ontogeny can homologies (or their lack) be ascertained in the various groups." Developmental details form but a broken path at present in this as in other walks of biological activities, but this does not lessen the truth of the view that they will ultimately make the only road of value, so far as can be foreseen at the moment. Prof. Kingsley has written a book which will be a work of reference on the subject for years to come. It is well produced, excellently illustrated, and provided with a comprehensive and useful bibliography which, while quite up to date, is not intended to be exhaustive.

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APHASIA.

By S. A. KINNIER WILSON, M.D., B.Sc., F.R.C.P., Physician for Out-patients, National Hospital, Queen-square; Junior Neurologist, King's College Hospital. Psyche Miniatures Medical Series. London: Kegan Paul, Trench, Trübner and Co. 1926. Pp. 108. 2s. 6d.

Dr. Kinnier Wilson has written for the "Psyche Miniatures" Medical Series a booklet on the difficult subject of aphasia. In so short an essay it is, of course, impossible to treat this subject fully, but he has contrived to touch on many of its aspects and to present a succinct and lucid account of its manifestations and pathology. The introduction, which is really one of the most important chapters, deals chiefly with the nature of speech and its relation to thought; in it the author insists that the anatomical and physiological aspects of the study of speech and its disorders must not be separated from the psychological. "The function of speech is an intellectual function; the neural arrangements underlying its activity constitute a physiological mechanism; and the component parts of the latter have an anatomical localisation or site." These are the texts on which the subsequent chapters are developed. In the section on anatomical considerations, it is merely stated that "lesions within a more or less well-defined cortical region, extending from the posterior part of the lower frontal lobe, by the island of Reil, to the temporal and lower parieto-occipital areas, are likely to reveal themselves clinically by aphasia in one or other form;" the author, moreover, "regards it as amply proven that lesions towards the anterior part of the speech region are followed by aphasic symptoms in which defect of expression predominates and those towards the posterior part by aphasic symptoms in which the defect of reception is pronounced;" yet it is apparent that Dr. Wilson is prepared to go further in assigning subdivisions of the speech function to smaller areas. The next chapter considers the acquisition of speech by the child and the relation of the various simpler functions which go to make up the complex ability to understand written or spoken words and to recall words for use in spontaneous speech. The reader will regret that the need for brevity has restricted the space allotted to psychological considerations; the differences of intellectual and emotional and even "automatic" speech are mentioned and some emphasis laid on the frequent loss in aphasic patients of the feeling for grammar or syntax, but the chapter leaves us greedy for more detailed study by one who has obviously much more to say. The essay concludes with observations on some clinical types of aphasia and a note on treatment.

The booklet is excellent and we hope that the author will one day be moved to give us his views at greater length.

BEHAVIORISM.

By JOHN B. WATSON, formerly Professor of Psychology and Director of the Psychological Laboratory, Johns Hopkins University. London: Kegan Paul. 1925. Pp. 251. 12*s.* 6*d.*

THE fact that psychology deals with mental processes incapable of objective study places it, in the opinion of some people, outside the domain of science. The attempt is, therefore, often made to define these processes in physiological terms, but the results are unsatisfying both to the physiologist and the psychologist. Behaviourists boldly eliminate the difficulty by denying any usefulness or validity to such ideas as consciousness, memory, or instinct, and Mr. Watson builds up his theories of behaviour without resort to these conceptions. We must admit his possession of a bold and original mind, even though, unversed in behaviourist nomenclature, we cannot formulate the admission without introducing one of the concepts the writer has eliminated. Starting upon the physiological basis of unlearned activities and simple responses, he accounts for complex behaviour as a growth or development of these mechanisms. Memory, for example, becomes a repetition of manual or verbal habits, but thinking, "on account of the concealed nature of the musculature with which it is done, has always been inaccessible to unaided observation and to direct experimentation" (p. 191). Thus we are able to understand the author's meaning when he says, concerning habit formation: "I have had my own laryngeal processes stimulated to work upon the problem from another angle" (p. 166). Yet he sometimes gives way under the strain of maintaining behaviouristic terminology, and on p. 226 speaks in frankly subjective language of the happiness and contentment of the worker, though with a parenthetic explanation that he uses the terms as they are popularly used.

The behaviourist theory is an ingenious and fairly consistent attempt to circumvent the problem of the relationship of mind and body. Mr. Watson's presentation of it is to be accepted as a method of approach to psychology which is finding some amount of support in America.

ANTHROPOLOGY.

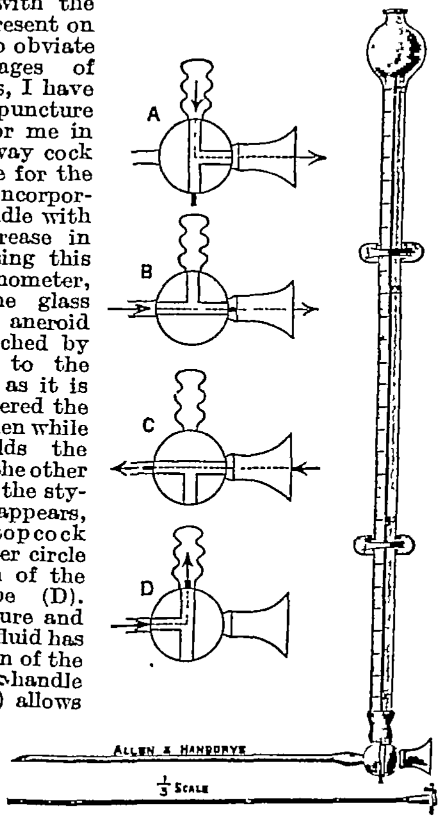
*Les Races et les Peuples de la Terre.* Second edition. By J. DENIKER. Paris: Masson et Cie. 1926. With 340 text figures and two plates. Pp. 750. Fr.75.

IT is doubtful whether the experts would consider this a sound summary of the present state of ethnographical knowledge, but for the ordinary reader it contains in a short space and with abundant illustrations an interesting collection of facts regarding the structure, manners, customs, and mode of life of men throughout the world. The correlation and interpretation of these data are notoriously ambiguous, and at the moment their historical and psychological significance are matters of active reconstruction and controversy with which the author does not concern himself at length. The first half deals in a general way with anatomy, houses and implements, psychology, social organisation, and so forth. The second half gives a systematic survey of the various races, and this should be useful as a dictionary in which to turn up any odd tribe which one may need to know more about. The footnotes give many references to the literature.

# New Inventions.

## A MANOMETRIC LUMBAR PUNCTURE NEEDLE.

THAT the pressure of the cerebro-spinal fluid is not measured in this country as often as it should be appears to be due chiefly to the difficulty of doing this single-handed with the apparatus at present on the market. To obviate the disadvantages of these apparatus, I have had a lumbar puncture needle made for me in which a three-way cock and a side tube for the manometer are incorporated in the handle with very little increase in weight. In using this needle the manometer, whether of the glass tube or the aneroid variety, is attached by rubber tubing to the needle as soon as it is felt to have entered the spinal canal. Then while one hand holds the needle in place, the other simply removes the stylet and, if fluid appears, turns the stopcock through a quarter circle in the direction of the manometer tube (D). When the pressure and pulsation of the fluid has been noted, a turn of the tap towards the handle of the needle (B) allows the fluid to run out of the manometer into the collecting tube and also allows further flow of fluid from the spinal canal. When the tap is turned away from the manometer (A) the manometer empties itself but the spinal canal is shut off. If it is desired to inject anything into the spinal canal, the tap may be turned towards the point of the needle, so that the manometer is shut off (C), but it may be though better to leave the manometer tube open, so that th injection pressure may be gauged and controlled. Th forward position of the tap may also be used fo replacing fluid with air. It is advisable to sterilis the needle with the stylet out, and with the tap turned towards the handle (B), as in that position water passes freely into the manometer tube from the inside of the needle. In the figure a glass manometer is shown, provided with two sliding clips, by which the initial and final levels of the fluid can be marked and read after the operation is completed.



Messrs. Allen and Hanburys, Ltd., of 48, Wigmore-street, London, W., are the makers.

J. G. GREENFIELD, M.D. Edin., F.R.C.P. Lond.

THE LANCET.

*LONDON: SATURDAY, JUNE 19, 1926*

## OSLER.[1]

THERE is a phrase in the Psalter, familiar to many from old association in connexion with Commemorations of Founders and Benefactors, a phrase which were it universally kept in mind would mean much for the happiness of the world *In memoria aeterna erit justus* To few men is this saying more applicable than to WILLIAM OSLER. Prof HARVEY CUSHING's excellent and fully detailed biography has already put on record OSLER's many activities and his wide and diverse fields of work, and has displayed him as ever striving for the good of his fellows and for the collection and dissemination of knowledge. But a further volume of Appreciations and Reminiscences of OSLER has its full justification, for it is only fitting that the Association of Medical Museums should wish to bear a prominent part in commemoration of one who from the start manifested the greatest interest in the organisation, and who called the first meeting of British medical men for the purpose of organising a British branch of that Association. So here we have a volume of over 600 pages containing appreciations and reminiscences of OSLER in practically every stage of his career

Most of them come from Canada, the country of his birth, the United States and England, the two countries where his professional labours were mostly carried on, but France speaks through PIERRE MARIE, Italy through MARCHIAFAVA, Germany through KARL SUDHOFF, and China through WU LIEN TEH (DR G L TUCK), Director and C M O of the Manchurian Plague Prevention Service It cannot be expected that the mass of papers contained in this volume should all be of equal merit, but one thing they have in common, and that is whole hearted and unstinted admiration of their subjects. The biographical section of the book covers 330 pages and is headed by an illustration of the coats of arms or seals of the five Universities which were the scenes of OSLER's academic activities—namely, Toronto, McGill, Pennsylvania, Johns Hopkins, and Oxford In regard to the arms of the last we note that the inscription in the book is not the familiar Dominus Illuminatio Mea, but the motto formerly in use, In Principio erat Verbum et Verbum erat apud Deum The first article in this section is a reprint of an address delivered by Dr NORMAN GWYN before the Medical Chirurgical Society of Montreal in November, 1920, which gives a delightful account of OSLER's immediate forbears, his father, and his uncle Edward, who was a medical man, and at one time a surgeon to the Swansea Infirmary EDWARD OSLER was interested in Marine biology and published sundry papers in Philosophical Transactions on Burrowing and Boring Marine Animals, exquisitely illustrated after his own drawings, some of which are reproduced on p 113 et seq This line of study showed itself inherited in WILLIAM OSLER when quite a boy, and was fostered by his admirable teacher, JAMES BOVELL, of Trinity College, Toronto Following the papers on Early Days are various papers and reminiscences by old pupils and others divided into sections dealing with the Montreal period (1870–84), the Philadelphia period (1885–89), the Baltimore period (1889–1905), and the English period (1905–19) All the reminiscences are interesting, and show the very varied characteristics of the man, one in particular, related by MARIAN OSBORNE, a relative of WILLIAM OSLER, in whose mother's house in Montreal he lived from 1871 onwards, when he was a professor at McGill University, is specially charming One day in the street he met a drunken old beggar who asked for alms. After some wholesome advice as to drink, coupled with a request that the old man should leave him his hobnailed liver, OSLER not only gave the man some money, but also took off his overcoat and gave him that too Two weeks afterwards the old man died in the hospital leaving a will in which he bequeathed "my hobnailed liver and his coat to my good friend WILLIAM OSLER." The coat, after disinfection, again passed into the service of the charitable physician. This episode is worthy of St Francis of Assisi, a saint whom in many ways OSLER resembled

And so the record goes on, a record of hard work, of helping lame dogs over stiles, of teaching and holding up to the younger generation an ensample of godly life, of sinking his own sorrows, especially that most bitter one of the loss of his only son in the war, in the Lethe of helping others, and of delight in books and their writers and of all real literary culture. OSLER's admirable Presidential address to the Classical Association in 1919 on the Old Humanities and the New Science perhaps better than any one of his numerous essays and public deliveries displayed his twofold qualities—his energy in aiding, encouraging, and restoring the sick to health, and his abiding joy in the words and the personalities of great thinkers. The facts so diligently and lovingly collected by Dr MAUDE ABBOTT make a volume worth the possessing

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[1] Appreciations and Reminiscences of Sir William Osler Bart With a Classified Annotated Bibliography Edited by Maude E. Abbott M.D McGill University Being Bulletin No. IX of the International Association of Medical Museums and Journal of Technical Methods Privately issued at 836, University-street, Montreal, Canada. 1926 £2.

## "ESSENTIAL" HYPOTENSION.

ONE effect of the widespread employment of the sphygmomanometer by physicians has been the detection of a group of cases with a definitely low systolic pressure, apart from such well recognised causes of low arterial tension as Addison's disease, anaphylaxis, or myocardial weakness, to this group of cases the name of "essential" hypotension has sometimes been given. An appreciable literature has accumulated in the United States concerning these cases, of which the articles of RIESMAN,[1] MOSENTHAL,[2] FRIEDLANDER,[3] and BARACH[4] may be cited. A systolic blood pressure below 110 mm. Hg is usually taken as indicative of this condition. In 10,142 male subjects 279 cases of essential hypotension were noted, giving an incidence of about 3 5 per cent, but other observers have placed the percentage as considerably higher The symptom-complex said to result from the hypotension is one sufficiently familiar to all medical men, and yet so nebulous that the critical physician may well cavil at the verbal description of it. Dr

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[1] D Riesman Atlantic Med. Jour, 1924, xxiv.

[2] C. H. Mosenthal: Nelson Loose-Leaf Medicine.

[3] A. Friedlander Jour Amer. Med. Assoc, 1924

[4] H. J Barach Arch. Int. Med., 1915.

FOSSIER,[5] of New Orleans, in a recent communication, puts it in these words:—

> "Mental and physical fatigue are the predominant symptoms of essential hypotension, which, I think, can safely be attributed to the lowered arterial pressure. These patients tire easily, and it is with the greatest difficulty that they can concentrate attention upon their work. Memory is thereby impaired, so much so that these subjects are mental defectives, to the degree that they cannot perform the day's work of their more fortunate brothers . . . the intensity of their symptoms is alleviated in the recumbent position, and increased in the upright. Vertigo and headaches are frequently present. These subjects are, as a rule, hypochondriacs and neurotics . . . the extremities are usually cold, cyanosed, moist, and numb . . . the skin and conjunctivæ are pale and present an anæmic appearance, which is frequently diagnosed as some serious anæmia, but the blood is generally normal in its count and hæmoglobin content."

Capillary hypotension from histamine poisoning, decreased tissue-respiration, and exhaustion of the suprarenal glands are amongst the modern hypotheses advanced to explain this state. It is hardly necessary to add that the same disorder has enjoyed many previous explanations varying from nervous exhaustion to chronic intestinal stasis. FOSSIER, in the recent article we have already quoted, points out the extreme frequency of hypotension and this group of symptoms amongst splanchnoptotic subjects, and finds in the dropping of the diaphragm and consequent elongation and narrowing of the aorta the explanation of the decline in blood pressure; the hypotension is, he concludes, merely a symptom of the dropping of the thoracic and abdominal viscera. With such a conclusion we are inclined to agree, making the obvious reservation that it affords no explanation of the general ptosis. Loss of tonus is the outstanding feature of these cases, and whether this results from a disturbance of the normal outflow of impulses from the central nervous system, or whether it results from an intoxication of muscular tissues are questions still to be answered. The most important conclusion that can at present be drawn would seem to be that it is not upon any single organ that attention should be riveted; the stomach, or the heart, or the uterus, or the kidney may attract notice, but to treat one of them alone is to court disaster. Nor would it seem that excessive inspection of the vascular tension is likely to lead to dramatic benefit. The use of the phrase "essential" hypotension is, in fact, to be deprecated until our knowledge has been further extended.

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## VENEREAL DISEASE LEGISLATION.

IN the campaign against venereal disease strategy dictates the earliest possible treatment of the greatest possible number of persons affected. Success is to be attained, first, by organising the facilities for treatment, and, secondly, by inducing patients to take advantage of them. From these premisses the authors of a recent article in the *Bruxelles-Médical* proceed logically to the conclusion that, if any of these patients will not trouble to have recourse to treatment, there is both a right and a duty to employ compulsion. As the only method of compulsion is compulsion by law, they briefly review the present legal position in various countries and then formulate legislative proposals of their own. The three authors are Mr. CH. AUDRY, professor of the Medical Faculty at Toulouse; Mr. H. RAMET, first President of the Court of Appeal at Toulouse; and Mr. GABRIEL MARTY, an advocate of that Court. They cherish no illusion that mere legislation can bring in the millennium; they realise that public opinion must be considered in any proposal to which public assent is required; they do not expect to procure many convictions under their law, but they think it will bring pressure to bear where it is wanted, will lay down a necessary principle, and will arm society against a grave peril. They are primarily proposing their legislation for France; it is to fit in with the civil and penal codes of that country. The authors mention an enactment in force in Quebec, but have taken no account of the legislation of Great Britain. The English and French legal systems differ widely; nor is public opinion in England and France likely to coincide as to the form which legislation upon the subject of venereal disease should take. Nevertheless the proposed law is well worth examination.

It begins by confining itself to syphilis. Other forms of venereal disease, say the authors, are admittedly serious, but do not endanger the nation or the species. The English Venereal Disease Act of 1917, it will be remembered, applies not only to syphilis but also to soft chancre and gonorrhœ. In Clause 2 of what in England we should call their Bill the authors set out the duty of anyone who is attacked by syphilis to obtain treatment from a medical practitioner. Clause 3 proposes to enact that a doctor, called in to verify the existence of syphilis, must give the patient a notice advising him of the fact of his disease, of the risk of contagion and its duration, and of the penalties imposed by law on anyone who communicates the infection to another. The doctor is to obtain from the patient a written acknowledgment of this notice; he will endorse upon it the results of his inquiries as to the source of infection, and he is to keep the document in his possession for six months and must communicate it, if required, to the Procureur de la République. The patient, having thus received notice, is obliged to notify the departmental Conseil d'Hygiène on a prescribed form. Doctors infringing this provision, or officials violating professional secrecy, are punishable by fine of from 100 to 3000 francs, a second offence being punishable by imprisonment. Clearly the authors would have liked to take the more direct and logical course of making the doctor report the disease to the public authority, so as to make more sure of notification and so as to establish a comprehensive central record of great value in eradicating the disease. But they realise that this course (which has apparently been adopted by Sweden and Czecho-Slovakia) would antagonise professional traditions of secrecy. They therefore make the doctor merely the guardian of the document. He does not have to denounce his client, but is merely called in (in the event of a prosecution) by the judicial system of the country in order to give evidence of what English lawyers call the *scienter*. Presumably he produces in court the patient's written acknowledgment. If the patient duly reported his illness himself to the departmental health authority as proposed, the doctor's evidence will perhaps be unnecessary. Under Clause 4 a doctor who is prepared to certify that the danger of infection is over for a certain time can give the patient a certificate to that effect. This protects the patient from penal consequences for the period specified; but if there is infection during or after that period the patient must consult the doctor afresh. At this point there comes a group of clauses containing various penalties for communicating syphilis. Mere communication is visited by a fine of from 100 to 3000 francs, with imprisonment for a second offence. If a man who knows or ought to know the danger of his act exposes another person to the risk of infection the penalty is imprisonment for from six months to two years and a fine of from 500 to 3000 francs; this penalty is doubled if there has been actual infection. Deliberate infection is punishable with heavier penalties still. All the punishments in this group are to be doubled if the offender has failed to comply with the already mentioned obligation of obtaining treatment from a doctor. They are also doubled if the victim is under 15 years of age. If the offender is still a source of infection the tribunal may order him to be placed under treatment or medical surveillance for five months or more. A victim of infection is given the right to damages except when the risk of communicating infection was known and voluntarily accepted, but the action must be brought within six months. The tribunal can hear all cases in camera, but judgment must be given publicly, though the name of the victim (if the latter so desires) may be indicated merely by initials. A provision is added against blackmail. Another clause applies Article 463 of the Code Pénal, thereby enabling the judges to take into account extenuating circumstances and to mitigate penalties. Finally there is the usual administrative provision for making regulations and prescribing forms.

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[5] A. E. Fossier: Amer. Jour. Med. Sci., 1926, p. 496.

Readers will have formed their own opinion as to how quickly we shall see any such law as this passed by the Parliament of the United Kingdom. Our existing legislation is characteristically piecemeal. We had, of course, in England the Public Health (Venereal Diseases) Regulations of 1916, directing local authorities to make schemes for institutional treatment and for the supply of salvarsan or its substitutes to medical practitioners, the local council being placed under the obligation to arrange to carry out the scheme as soon as the central authority approved it. Councils were also to arrange for local practitioners to obtain scientific reports on material submitted from suspected patients, and were permitted to provide for instructional lectures on venereal disease and for the publication of information as deemed necessary or desirable. Then in 1917 Parliament took the very practical step of restricting advertisements of remedies and prohibiting the treatment of venereal disease otherwise than by a duly qualified medical practitioner. The latter prohibition, it will be recalled, was to become applicable in local areas as soon as approved schemes for gratuitous treatment began to operate therein. Such schemes are gradually covering the country. Another useful enactment of a minor kind was the amendment in 1923 of the Merchant Shipping Acts, whereby the cost of medical attendance for masters and seamen was thrown on ship-owners (without power to deduct from wages) in the case of venereal disease as it was already in the case of other illnesses. We have admittedly no broad and comprehensive measure on the whole subject; there is a national hesitancy to examine the problem or even to recognise its existence. Possibly history will repeat itself and national legislation will be preceded by local legislation in certain progressive districts. Attention has already been directed to the Bradford Corporation Act of 1925. Section 68 applied the Infectious Disease (Notification) Act of 1889 to venereal disease, experimentally for a period of five years, in certain cases. Those cases are: (a) infants under 2 years of age suffering from such disease, and (b) persons (other than children) who refuse or neglect to undergo further treatment for such disease after being informed by a medical practitioner, or by the medical officer, that such treatment is necessary. The Bradford clause may be the forerunner of legislation of general application.

# Annotations.

"Ne quid nimis."

## RADIOLOGICAL INVESTIGATIONS ON THE ACTION OF PURGATIVES.

RADIOLOGY, besides having provided a noticeable contribution to the diagnosis and therapeutics of diseases of the digestive system, has still some important problems to take in hand from the point of view of physiopathology and pharmacodynamics, and not the least important of them is the action of various drugs on the tone and motility of different segments of the intestine. The literature on this subject has not been commensurate with its importance, and observations on the action of drugs on the intestines such as those of Magnus have been made only on animals. Prof. P. Alessandrini,[1] of Rome, has made a series of experiments on the action of saline purgatives and drugs of the anthraquinone group (cascara, phenolphthalein), of podophyllin, and castor oil. He used barium sulphate in preference to bismuth because the former has no influence on the rate of evacuation of the stomach and intestines, while, as has been shown by Best and Cohnheim, the latter causes a certain degree of retardation. The amount given was 100 g. in 300 c.cm. mucilage, and every patient was subjected to examination immediately and after repeated intervals up to 48 hours after the opaque meal. Normally the jejunum is full in the first half hour, and after about two hours the opaque meal occupies the ileum. The passage into the cæcum begins generally after the second hour, and after six or seven hours the ileum is empty and the meal occupies the ascending and as far as the middle of the transverse colon (Cannon's ring). After 24 hours the whole colon is full and at the end of 48 the meal is evacuated.

As a principle of physiopathology it may be affirmed that in order to produce a purgative action it is necessary that the purge should act on the colon, since a greater rapidity in emptying the stomach and small intestine may be accompanied by a greater stagnation in the colon. The action of various drugs, therefore, is expended either on the colon alone or on the colon and small intestines simultaneously. Under physiological conditions two zones exist in which stimulation induces an expulsive peristalsis. One consists of the cæcum and ascending colon, the stimulation of which determines the great peristaltic movement of Holzknecht, which originates in the cæcum and continues as far as the transverse and descending colon unless there is a spasm of the proximal portion of the transverse, the so-called Cannon's ring. The other consists of the ampullary portion and rectum, whose stimulation may provoke reflexly a large expulsive movement such as may be caused by a glycerine suppository or the very act of defecation. It is well established that saline purgatives are not only absorbed with difficulty but also prevent the water in the intestines from being absorbed, hence the contents of the colon are rapidly eliminated. The sulphates, moreover, produce a certain amount of sulphuretted hydrogen which acts as a stimulant to peristalsis. From his radiological experiments Prof. Alessandrini found that after the administration of 40 g. of saline in 250 c.cm. of water, in only one case was there caused a slight acceleration in emptying the stomach and small intestine, while in the other cases evacuation of these organs occurred normally, the gastric tone and peristalsis not being in the least degree modified. This would seem to show that the administration of small doses of sodium sulphate after meals in cases of gastric atony has no experimental foundation. So much the more that in the one case of slight acceleration noticed, the stomach showed feeble peristalsis and atony, and the acceleration was connected with a slight degree of pyloric insufficiency. On the rest of the intestines there was but a slight acceleration in emptying the cæcum and ascending colon, the principal action being expended on the second portion of the colon. This is confirmed by coprological investigations which show that the alimentary residua after purging with sodium sulphate are much less than with other purgatives. Consequently, as a reducing agent sodium sulphate is the least indicated as a purge. In four patients examined after the administration of Carlsbad salt (two teaspoonfuls in 200 c.cm. of water) there was in every instance a slight increase in gastric and intestinal motility; the chief action, however, was on the second portion of the colon and no doubt due to alkaline sulphates. This action of the sodium chlorides and bicarbonates in the Carlsbad salt justifies its use in chronic gastric intestinal affections; its action on cholecystitis is, however, doubtful.

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[1] I problemi della Nutrizione. Giornale di fisiopatologia di clinica e di dietetica. May–December, 1925, Rome. Via san Nicolo da Tolentino.

In experiments with substances of the anthraquinone group (cascara, rhubarb, senna, and aloes) it was found that these were absorbed but slowly and incompletely; their purgative action is delayed because the decomposition which liberates their active principle (emodin) takes place but slowly. In large doses there was marked spasm with pain without, however, any indications of true inflammatory phenomena. Differences in the action of cascara and podophyllin are of some practical interest. Cascara invariably caused a certain retardation in emptying the stomach which lasted from one to two hours. This retardation was noticed also on the small intestine. Its action on the ascending colon was negative and was expended almost exclusively on the transverse. Usually the colon up to the splenic flexure filled normally; when the opaque meal reached this point there was active peristalsis and a complete evacuation in 10–12 hours after administration of the drug. This delayed action is due to the fact that the liberation of the active glucoside takes place by slow decomposition. On the other hand, podophyllin showed an acceleration in emptying the stomach and small intestine, the stimulant action on the peristalsis of the colon being manifest even on the proximal portion. Hence when it is desired to act on conditions of diffuse atonic constipation it is better to give cascara alone, provided that gastric atony is not also present. If, on the contrary, it is wished to act on cases of constipation of the ascending type especially associated with catarrh of the small intestine, then the preference should be given to podophyllin, which in small therapeutic doses does not give rise to any inflammatory action. When atonic constipation is associated with gastric atony it is advisable to combine cascara and podophyllin. Phenolphthalein, which by its chemical constitution belongs to the anthraquinone group, behaves differently in its therapeutic effects. It has the advantage, like all laxatives of this group, of not irritating the gastro-intestinal membrane. Its action in doses of 20 cg. is that, while it does not modify the rapidity of evacuation of the stomach and first part of the small intestines, it stimulates specially the peristalsis of the ileum and cæcum. Hence in constipation of the ascending type it is the ideal purgative, since moreover it does not cause pain and its action is manifest after three or four hours as soon as the gastric contents have reached the cæcum. Radiology disclosed some interesting facts regarding the action of castor oil, which acts especially on the small intestine without irritating it, by reason of the pancreatic juice which breaks it up into glycerine and ricinic acid. It was noticed, moreover, that there was always a retardation in gastric evacuation owing to paresis of gastric motility which, however, was regained after an hour. There was very rapid transit through the small intestine and throughout the whole length of the colon, being most marked in the proximal portion. This explains the efficacy of this drug in ensuring a rapid and complete evacuation of the whole intestine. Its continuous use, however, should be avoided on account of its harmful influence on the movements of the stomach.

These observations do not pretend to have solved definitely all the problems in relation to the action of various purgatives and the indications for their use, but they serve to show that radiological methods are valuable in the study of the complex questions of experimental pharmacology.

## LIME BURNS OF THE EYE.

Among industrial accidents to the eye lime burns of the cornea due as a rule to mortar or cement hold an important place, the resulting opacity being due not only to the actual destruction of corneal tissue but to the deposition of particles of insoluble calcium carbonate. A method of treatment founded upon the knowledge of this fact was recommended by zur Nedden at the Heidelberg Ophthalmological Congress in 1905, but although mentioned in Fuchs's, Römer's, and Parsons's text-books it does not appear to be generally known. Mr. E. Wolff, in the April number of the *British Journal of Ophthalmology*, in stating these facts gives details of two cases successfully treated, and tells us that the method is now in routine use both at University College Hospital and at Moorfields. The method consists of daily irrigation for a period of 15 minutes with a solution of 10 per cent. neutral ammonium tartrate. By this means the insoluble calcium carbonate is converted into the slightly more soluble calcium tartrate which is slowly washed away. In recent cases it is necessary thoroughly to cocainise the eye as a preliminary to treatment. In an acute case of this sort, in which vision was at first reduced to counting fingers, it was restored to normal after six weeks' treatment. In another patient who had already been treated for a month elsewhere the vision was improved from 6/60 to 6/12 after two months of the ammonium tartrate treatment. These successes should be noted by medical officers who work in industrial districts.

## PROFESSOR KROGH: A DEDICATORY VOLUME.

A collection of papers[1] of considerable interest and instruction to physiologists has recently appeared on the occasion of Prof. Krogh's fiftieth birthday, as the result of the wish of his numerous pupils and co-workers to acknowledge and commemorate the lasting debt owing to him as their teacher and friend. Dr. J. Lindhard points out in the preface that the occasion also marks the removal of the old laboratory in Ny Vestergade to the new building which will be erected by the Rockefeller Foundation for the purpose of Danish physiological research. "That removal will cause an increase of activity, but no other change. The delight in work which prevailed in the old place will never be exceeded, and the quality of the work will hardly be altered, but numerous students for whom there was not room enough at Ny Vestergade will now get their chance, and Krogh himself will obtain a suitable place of work, a convenience which he has of recent years only too often given up to others." The volume contains in all 22 papers of diverse nature, a few of which merit special attention. An account is given by Dr. L. S. Fridericia of work carried out by himself in the University Institute of Hygiene in Copenhagen, on the influence of the Jonas-Nielsen sterilising process on the A-vitamin content of milk. This process by which milk is brought rapidly to a temperature of 130° C., out of contact with air, and as rapidly cooled, was found to have comparatively little effect on the vitamin content, 3 c.cm. of the sterilised milk containing at least as much A-vitamin as 2 c.cm. of the same milk in the raw state. The results of this investigation form a useful parallel to those previously obtained by Gowland Hopkins, working with butter. Dr. H. C. Hagedorn communicates an interesting and valuable piece of work on the regulation of the blood-sugar. It is shown that whereas in the fasting subject there is no appreciable difference between the sugar content of the arterial and that of the venous blood, after ingestion of sugar the former runs for some time at a decidedly higher level than the latter. On the assumption that approximately half the right auricular blood has the same composition as that in the cubital vein from which samples for analysis are taken, it is found that almost the whole of the sugar ingested is absorbed in the periphery. In order that this observation may be brought into line with the known function of the liver as being a storehouse for carbohydrate, the hypothesis is put forward that alimentary hyperglycæmia covers two processes—viz., (1) a hyperglycæmia caused by the sugar which is carried through the portal vein to the liver, passes this and is deposited in large amount in the peripheral tissues; and (2) a hyperglycæmia caused by sugar carried to the peripheral tissue from the liver, but this transportation does not come into action until the absorption from the intestine has ceased or almost ceased.

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[1] Physiological Papers, dedicated to Prof. August Krogh, Ph.D., LL.D. London: Wm. Heinemann (Medical Books) Ltd. 1926. Pp. 376. 30s.

Dr. G. Liljestrand and Dr. A. V. Sahlstedt contribute an important addition to the subject of gas diffusion through animal membranes. Using the frog's lung they find that the rate of diffusion of gases is proportional to $V^{\frac{2}{3}}$, where V is the volume of the lung, a result which was to be expected from mathematical considerations. Temperature changes, however, affect the rates of diffusion of $CO_2$ and of $C_2H_2$ in a very different manner, a change of temperature from 0 8° to 37° hardly affecting the rate of diffusion of $CO_2$, whilst causing a marked increase in the rate of diffusion of acetylene. These differences are so far unexplained on a physical basis, since in both gases a marked diminution in the rate of diffusion with rise in temperature was to be predicted. It is pointed out, therefore, that the solubility of each gas is probably very differently influenced by the components of the tissue forming the alveolar wall. Among other contributions of interest is one by Dr. Bj. Vimtrup on the structure of the Malpighian bodies in the human kidney. Though it has long been recognised that the glomerular tuft is divided up into several clusters of capillaries and that the visceral layer of Bowman's capsule is reflected into the spaces between these clusters, evidence is now brought forward that each capillary loop is covered, independently of the remainder, by a reflection of this membrane. The surface at which filtration may occur thus becomes very much greater than that which the more common histological descriptions of glomerular structure would have us believe.

The editors and publishers deserve congratulation on the collection in such attractive form of an interesting and stimulating series of papers

## THE DUSSELDORF MEDICAL EXHIBITION.

The great medical exhibition now being held in Dusseldorf may be fairly described as a medical Wembley. The word Gesolei, by which it is known for short, is compounded of Health (Gesundheitspflege), Social Welfare (Sociale Fürsorge), and Physical Culture (Leibesübungen), and here by every possible means these subjects are brought before the notice and imagination of the public. Prof. Arthur Schlossmann and his capable assistant, Dr. Liesegang, the moving spirits of the exhibition, are to be congratulated on the result of their efforts during the past twelve months. Here, illustrated by large-scale diagrams, maps, working models, and miniatures of hospitals, convalescent homes, health centres, and the like, are room after room and corridor after corridor filled with structures designed to illustrate every phase in the development of health insurance, public health, and preventive and curative medicine. The building and engineering trades have contributed their part and the result will interest public health officials, general practitioners, and social welfare workers. In Germany health insurance is compulsory for everyone with an income under £250 per annum, and voluntary subscribers are accepted over this level without income limit, with the result that private practice is said to have shrunk to 20 per cent. of its former extent. The great majority of German practitioners are, therefore, vitally interested in the proportion of insured funds which go to sick pay, maternity benefit, unemployment pay, maternity, hospital, and medical services. The visitor whose patience and stamina will bear the strain can learn all these things in one day at the Dusseldorf Gesolei. Relaxation is afforded by bands, restaurants, miniature railway, and the whole exhibition is picturesquely situated on the banks of the Rhine. The official catalogue in German contains 420 pages of letterpress and numerous plans, while shorter explanatory pamphlets in English are available. The exhibition remains open until October.

## THE LATE EFFECTS OF POISON GAS.

Before the Disarmament Drafting Subcommittee concluded its labours it adopted Lord Cecil's proposal that the Military and Economic Subcommittees should study the effects of poisonous gases used in warfare and give an opinion as to the best means of preventing their employment in future. In such an investigation the remote effects of any gas are as important as the immediate. The nature and the degree of permanent disturbance of the respiratory and other systems that may be fairly attributed to gassing during the war is still uncertain, though a large amount of material should be available for study in all belligerent countries. In America the problem is now being attacked by an attempt to investigate the present or recent condition of some 70,000 ex-Service men whose hospital records show that they have been gassed. The members of the Board appointed by the United States Veterans Bureau to organise the investigation include Dr. Philip B. Matz, Chief of the Medical Research Subdivision of the Bureau; Dr. A. K. Krause, Associate Professor of Medicine, Johns Hopkins University Medical School; and Lieut.-Colonel H. L. Gilchrist, Chief of the Medical Research Division of the Chemical Warfare Service, U.S. Army. The Board is not concerned with the better-known and more immediate effect of war gases. It particularly desires information on several points:—

1. Does any war gassing received in action result in disability which is relatively lasting and permanent?

2. Does it cause lasting anatomic (pathological) changes, with or without disturbance of function (symptoms and disability)?

3. What organs or systems may thus be permanently affected or disturbed?

4. What symptomatology may exist under these circumstances?

5 If war gassing does produce relatively permanent effects, may a similar condition or conditions be produced by other agencies (diseases such as influenza, tuberculosis, effort syndrome, &c.)?

The term "lasting" or "permanent," as used above, means such late residual or remote changes that continue down to the present time and are appreciable.

Those who are in a position to coöperate in the projected study by offering impressions from their personal experience are asked to communicate with the United States Veterans Bureau, Washington, where reprints of relevant articles will also be received with appreciation. The most difficult point in the questionnaire to answer categorically will probably be No. 5. If it be found that war gassing may produce relatively permanent effects, are these of a peculiar nature or might they equally well have been produced by other agencies? Symptoms or lesions produced by an individual chemical agent may easily be recognisable shortly after the time of injury, but after a term of years the body's healing process, which is essentially that of absorption and fibrosis whatever the nature of the insult to the tissues, is more than likely to mask their characteristics. The existence of a late lesion pathognomonic of gassing would have to be confirmed by its demonstration in a large number of human victims unless, of course, it could be substantiated by animal experiment. In the course of researches, published on p. 1192 of this issue of THE LANCET, on guinea-pigs exposed to the inhalation of mustard gas in a concentration of 1 in 20,000, Surgeon-Commander McCowen found histologically that the upper air passages, and the greater part of the bronchial tree, in addition to the lungs, were invaded by leucocytes in every stage of disintegration. After subcutaneous injections of the gas or applications to the skin the same invasion is seen at the sites involved, directly attributable to the intense reaction set up by mustard gas. Surgeon-Commander McCowen regards the increase in the hæmobactericidal power of the blood after exposure to this gas or to other tissue-destroying substances such as hydrochloric acid, formic acid, and liquor epispasticus, as due to release of antibacterial elements into the blood from disintegration of leucocytes at the site of damage. That the hæmobactericidal power of the blood is undoubtedly increased—the more severe the exposure the more pronounced the increase—is evident from the protocols of the experiments attached to his communication in the form of an appendix which space did not allow us to publish. This interesting observation, however, has little bearing on the problem of permanent effects, since presumably the blood reverts to normal in the course of a few days. But the histological study of the tissues, especially the respiratory passages, of guinea-pigs who have been exposed to the same concentration of inhaled gas and have survived for months or years might well throw light on the process of healing, of which the intense leucocytosis observed is presumably the first stage. The scarring may take some characteristic form which could be looked for in the autopsies of men known to have been gassed. By the correlation of such experimental findings with clinical observation it is at least possible that the Veterans Bureau may collect enough evidence to abolish gas warfare from among the weapons of civilised warfare.

## SOME EARLY AND LATER HOUSES OF PITY.

Dr. Hobson is already well known by his charming little Book of the Wandle (that rivulet whose defilement was eloquently mourned by Ruskin) and also as a protagonist in defence of Whitgift's Hospital, which some, unworthy of their inheritance, are anxious to pull down. In fact, the book now before us[1] grew from the desire of Dr. Hobson to write more fully than he had hitherto done about this hospital, and therefore to write about other hospitals prior to or contemporary with Whitgift's. The author says in his preface that his book owes much to Miss R. M. Clay's "Mediæval Hospitals of England" and still more to Dugdale's "Monasticon." He confesses that he has only made a selection from the many ancient hospitals and thus inevitably has left out something which somebody else thinks should be there. We for our part are surprised that Dr. Hobson has omitted any mention of St. Bartholomew's, Rochester, or rather Chatham, a foundation older than the better known house in Smithfield by some 15 years; it was founded before 1108, is still in use, and the original chapel remains. Neither does he describe the Spital of St. Katherine in Rochester, which is still in being; this foundation is comparatively modern, being founded in 1316. It is sad to see how many of these useful foundations fell on evil days, mostly in the great spoliation under Henry VIII., but some before this date owing, it must be confessed, to unworthy masters or governors. The original intentions of the pious founders were as nothing in the eyes of Henry VIII., of his bully, Thomas Cromwell, or of sundry commissions of later date, an admirable sketch of whose actions and the results thereof was given by Anthony Trollope in "The Warden." Dr. Hobson writes about Whitgift's Hospital and its archiepiscopal sister, Abbott's Hospital at Guildford, with a natural affection. We like his advice to his readers: "Go and see for yourselves, as, indeed, many do from all quarters of the world, including even some of the townspeople of Croydon." A whole chapter is devoted to the beautiful hospital (God's House) at Ewelme. This hospital, which was founded by William de la Pole, Duke of Suffolk, remained in the same family until 1525, when the last de Pole was killed at Pavia. Later on James I. annexed the mastership to the Regius Professorship of Medicine at Oxford, and until quite recently the Regius Professor of Divinity was ex officio rector of the parish. Dr. Hobson notes (p. 72) the statue of Alice de la Pole represented in her shroud, and gives a footnote by Mr. R. Hutchinson stating that these shrouded figures came in about the fifteenth century and lasted through Tudor times. Among the most notable existing ones is that of Dr. Donne, now in St. Paul's Cathedral, the only monument from the old building which escaped the fire. There are also fine examples in Maidstone Parish Church, being monuments to the Astley family circa 1600.

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[1] Some Early and Later Houses of Pity. By John Morrison Hobson, M.D., B.Sc. London: George Routledge and Sons, Ltd. 1926. Pp. 199. 10*s.* 6*d.*

## CONTAGIOUS ABORTION.

THE organism which in the new nomenclature is called *Alcaligenes melitensis* lives naturally in goats and causes Malta fever when it infects man. The microbe *A. abortus* commonly lives in cattle and causes widespread losses of calves in this and other countries. The two species are extremely closely related to one another, and, apart from their pathogenic effects, the bacteriologist has to use his most refined serological technique to distinguish one from the other. Evidence has now accumulated that *abortus* may occasionally cause a vague febrile disease in man of the genus P.U.O.; some recent cases are described by Dr. I. F. Huddleson in America.[1] And it will, perhaps, be a surprise to many people to learn that English milk contains *A. abortus* quite frequently. In the last number of the *Journal of Pathology and Bacteriology*, the principal contents of which have already been summarised, Dr. G. S. Wilson and Miss Muriel Nutt, working in the Public Health Laboratory of the University of Manchester, narrate their discovery of this organism in about 8 per cent. of the samples of milk examined. This does not indicate any serious danger to human health; considering the amount of exposure to which cowmen must be subject, human infection is evidently very rare. But the recognition of its possibility will help to explain a few cases of obscure illness. The serum of a case of Malta fever will agglutinate both *melitensis* and *abortus*, and the serum from a case of *abortus* infection will, by the ordinary methods of testing, give a positive Widal reaction with both organisms too. Hence, presumably, come the odd examples of Malta fever which have been suspected to arise in this country. For it is now known that *abortus* antibodies can be found in a sensible proportion of samples of serum taken from children who have consumed cows' milk. And the probability seems to be that *abortus* in milk may actually be useful as a preventive of Malta fever; Khaled[2] showed that monkeys and goats can be immunised against *melitensis* by vaccination with *abortus*, and Nicolle suggested that this might be a useful method of human protection. The reverse can presumably also occur, and this may explain the old custom, more or less prevalent throughout Britain, of running a goat with a herd of cows to prevent miscarriages. Attention has several times been drawn to this.[3] Farmers have invented a variety of explanations of the habit; but the facts now known suggest at once that the goat acts as a prophylactic because the

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[1] Jour. Amer. Med. Assoc., 1926, lxxxvi., 943.

[2] Jour. Hygiene, 1924, xxii., 335.

[3] THE LANCET, 1022, ii., 540, 743; Brit. Med. Jour., 1925; ., 764.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## CLXXVII.—THE TREATMENT OF ANÆMIA.

### II. CHLOROSIS AND SECONDARY ANÆMIA.*

### (*a*) CHLOROSIS.

THE most remarkable fact concerning chlorosis is its almost complete disappearance within recent years. Obviously, the reason for its disappearance should reveal its treatment. The great improvement in conditions of labour, and the passing of the sampler and the "accomplishments" in favour of outdoor games among girls seems to afford the explanation. Chlorosis is probably induced by deficient oxidation during a period of active bodily development. Insufficiency of active exercise leads to lessened oxidation. The diminished oxidation leads to a less demand for the oxidising agent and the blood becomes poor in hæmoglobin. A vicious circle is thus established and the chlorotic girl becomes unfit for exercise. The theory that chlorosis is due to the wearing of tight corsets seems to be merely a part of the truth. On occasion the corset by interfering with respiration and by making exercise impossible may have played a part, but it may be said that the hockey stick and the fox trot have banished corsets and chlorosis together. A girl may suffer from over-work and fatigue and yet not become chlorotic. It is the lack of *active* exercise which is the important factor. The main difficulty to be overcome in the management of chlorosis is to stimulate oxidation in a patient who is unfit for exercise. Secondary difficulties are the poor and sometimes depraved appetite, constipation, and lassitude of mind and body. The object of treatment is not merely the removal of symptoms which may be relatively slight, but the removal of a handicap to physical and mental development at a time when these should be most active.

#### *General Measures.*

It may be a difficult question to decide whether a chlorotic girl is to be encouraged to take active outdoor exercise or advised to give up the attempt. A useful working rule is to keep patients in bed as long as the hæmoglobin percentage is under 60.

*Diet.*—The diet requires supervision. Chlorotic girls often prefer sweets and starchy food, and do not ingest a sufficient quantity of meat. Some firmness may be required in meeting this difficulty. Digestive troubles may require attention. An alkaline mixture combined with a bitter is often useful. Constipation must be dealt with. The most useful remedies are aloin and cascara.

#### *Drugs.*

Iron should be given, and given largely. The forms which may be employed are discussed in the section on secondary anæmia. It should be persisted with till the hæmoglobin percentage has reached 80. It is very much easier to treat a first than a subsequent attack, and a thorough recovery is less likely to be followed by relapse. Arsenic should not be used as a matter of routine, but it is useful in those cases in which the number of red corpuscles is materially reduced. Sometimes benefit follows the administration of digitalis, and this drug may be tried in cases not responding readily to iron.

#### *Prophylaxis.*

A sufficient amount of exercise should be taken to promote oxidation and to stimulate the formation of hæmoglobin. Over-fatigue, exhaustion, and bad hygienic surroundings, which impair the activity of the bone-marrow, either directly or indirectly, by making active exercise uncongenial or impossible, should be avoided. The prophylactic use of iron is worse than useless. In all ordinary circumstances enough iron for requirements is ingested with the food and more is useless. The large doses recommended in chlorosis act as stimulants, which do no good when not required and lead to diminished efficiency should necessity for their use arise.

### (*b*) SECONDARY ANÆMIA.

It may not be amiss to point out that before an attempt is made to treat anæmia it should be correctly diagnosed. Anæmia may be overlooked in persons who lead an outdoor life with weather-beaten faces. More frequently anæmia is diagnosed because of pallor. The pallor may be due to indoor life, aortic disease, or cardiac debility. The pallor that follows malaria is more often due to circulatory debility than to lack of hæmoglobin, although anæmia may be severe. It is therefore important to use instruments of precision before arriving at a diagnosis. The busy practitioner may plead lack of time to make blood counts, but it requires little time or technical skill to make a rough estimate of the hæmoglobin. It may be remarked in passing that the type, degree, and progress of anæmia can only be assessed with accuracy when full examinations are made. It is important that minor degrees of anæmia should not be allowed to obscure a more important condition. Such a case is the anæmic-looking girl with a tuberculous lung.

#### *Causes.*

It is important not only to diagnose anæmia, but to try to ascertain its cause. The most obvious is actual hæmorrhage, but if hæmorrhage is severe, its gravity is due to loss of fluid rather than to loss of hæmoglobin. The obvious indication is therefore to arrest the bleeding if possible and transfuse fluid. If the patient survives the initial loss of fluid he is still in danger from lack of blood, and the experience of the Great War proved that perfusion of blood is a more effective remedy that perfusion of saline solution. It is seldom that any of the blood diseases lead to massive bleeding. The hæmatologist is often asked to examine the blood to try to account for bleeding. The cause is generally to be found in such a condition as duodenal ulcer or uterine fibroid, and the anæmia is more commonly the result than the cause of the hæmorrhage. The bleeding of hæmophilia, purpura, and leukæmia is persistent rather than severe. It may be remarked that repeated hæmorrhages are specially dangerous. Occult bleeding should not be overlooked. Duodenal ulcer, intestinal worms, chronic dysentery, and piles deserve mention. Among other causes, bad feeding, poor digestion, sepsis or other toxæmia, albuminuria, and unhealthy surroundings are subjects for inquiry.

#### *General Measures.*

Granted that causal factors have been eliminated or mitigated, it is possible to treat a case of simple secondary anæmia after noting the patient's appearance, but it will add to the patient's advantage and the practitioner's interest if he will make an initial blood examination and repeat it at intervals of a fortnight. Patients with less than 60 per cent. of hæmoglobin should be kept in bed till that figure is reached. The diet should be light and nutritious. A little wine may be allowed as a stimulant to appetite, but the prescription is often more easily started than stopped. The old idea that red wines have any direct effect on hæmogenesis is fallacious.

#### *Drugs.*

*Iron.*—A depleted, overworked, or exhausted marrow can turn out red corpuscles faster than it can provide them with hæmoglobin. The expression of this is the low colour-index. Iron appears to act as a stimulus to the formation of hæmoglobin, and medicinal iron is not to be regarded so much a supply of iron as a stimulus to the utilisation of iron. It should be given in large, even massive doses if they are tolerated, and should be stopped as soon as the object of its administration has been attained. Blaud's pill capsules in doses of 10 gr., thrice daily, are very useful. The tincture of perchloride of iron is very efficacious, but not always tolerated by the stomach. Reduced iron when free from sulphur is excellent and the dose is small. The scale preparations contain too little iron to be of much use. Various forms of organic iron have been recommended, but no manufacturer has yet succeeded in inventing a sufficiently arresting name for his preparation to bring it into general use by a scientific profession. The products of hæmoglobin we have found useless. Some of the others are moderately useful, especially in cases with dyspeptic symptoms, but none are so good as the inorganic salts when they are tolerated. Hypodermic injections of iron have no special advantage.

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* An article by Dr. Goodall on the Treatment of Pernicious Anæmia appeared in last week's issue of THE LANCET.

*Arsenic.*—Arsenic is often a useful adjuvant to iron. It is of special value when the number of corpuscles is low, and also in cases where the colour-index is high or tending to rise. Only small doses are required. The liq. arsenici hydrochlor can be given with iron. Tablets containing Blaud's pill and arsenic are convenient.

### *Other Measures.*

Circulatory stimulants sometimes seem to start a patient on the path to recovery. Horse serum may be tried hypodermically, or in doses of 10 c.cm. by the mouth. As was pointed out in considering this agent in the article on the treatment of pernicious anæmia, the patient should not be informed of the contents of the medicine if given orally or nausea may result. Sunlight, exercise, and massage are all desirable. Transfusion is not likely to be required in simple secondary anæmia. In post-hæmorrhagic cases it may be required. A hæmoglobin percentage of less than 15, a low blood pressure, and the availability of a suitable donor would be important factors in determining the operation.

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# Special Articles.

## MEDICAL FACULTY OF EDINBURGH UNIVERSITY.

### BICENTENARY CELEBRATIONS.

THE celebration of the bicentenary of the foundation of the Medical Faculty of Edinburgh University took place on June 10th and 11th. The proceedings opened with the University dinner, which was held in the upper library of the old college on June 10th. Upwards of 200 members and guests attended. Sir Alfred Ewing, Principal and Vice-Chancellor of the University, was in the chair. After the toast of the King, the Chairman proposed the Guests in a speech which was certainly not the least happy of the many he was called upon to deliver during the celebrations. It was responded to by Prof. van der Hoeve, Dean of the Faculty of Medicine, University of Leyden; Dr. O. Robert Vaudescal, of the Faculty of Medicine of the University of Paris; Prof. Sir Humphry Rolleston, representing Cambridge University; and an old Edinburgh graduate, Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine. The toast of the Edinburgh School of Medicine was proposed by Prof. Sir Archibald Garrod, representing the University of Oxford, and was replied to by the Dean of the Faculty of Medicine (Prof. Lorrain Smith), the President of the Royal College of Physicians of Edinburgh (Prof. G. M. Robertson), and the President of the Royal College of Surgeons of Edinburgh (Mr. Logan Turner). Sir John Rose Bradford, President of the Royal College of Physicians of London, proposed the health of the Chairman.

On Friday, June 11th, the Honorary Graduation took place in the McEwan Hall at 10.30 A.M., the proceedings having been opened with prayer by Prof. W. P. Paterson, D.D., LL.D. The Vice-Chancellor welcomed the 80 representatives of the universities and medical schools of Great Britain and Ireland, Copenhagen, Leyden, Manitoba, Oslo, Paris, Pennsylvania, Saskatchewan, Stockholm, and Toronto, who had assembled to do honour to the great Edinburgh school. The delegates greeted the Vice-Chancellor and presented their addresses. The Dean of the Faculty of Law, Prof. James Mackintosh, presented for the honorary degree of doctor of laws ten graduates of the University of Edinburgh who had, as he said, a common background of experience and tradition, all having been reared in the same medical faculty. In introducing them individually he spoke of the several ways in which each had brought credit to the school. The names of the honorary graduates are Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine; Prof. R. Howden, Durham University; Prof. William A. Jolly, Cape Town University; Sir George Newman, Chief Medical Officer of the Ministry of Health, London; Prof. A. Primrose, University of Toronto; Prof. Sir John Robertson, University of Birmingham; Prof. Ralph Stockman, University of Glasgow; Mr. Logan Turner, President of the Royal College of Surgeons of Edinburgh; Sir Norman Walker, University of Edinburgh; and Prof. James T. Wilson, University of Cambridge.

After the ceremony Sir George Newman delivered an address on the history of mediæval medical schools, noting the revival of the Hippocratic tradition, and the rising fame of Leyden in the seventeenth and early eighteenth centuries. He traced the influence of Leyden on the development of the medical faculty of Edinburgh, congratulated the faculty on its past achievements, and predicted for it an equally brilliant future.

A short but impressive service held at St. Giles' Cathedral was made memorable to those attending by the beautiful rendering of the anthem ("God be in my head") by Walford Davies.

Luncheon followed in the Royal College of Surgeons of Edinburgh. Mr. Logan Turner presided, Mr. Alexander Miles acting as croupier. The loyal toasts having been honoured, the President proposed the Guests, Prof. T. Gillman Moorhead responding.

In the afternoon Sir John Gilmour, Secretary for Scotland, opened the reconstructed department of surgery, an account of which was given in last week's LANCET. The Principal of the University said that the appointment of a zealous young man to the chair of surgery had carried with it the obligation to try to meet his enthusiasm by giving him opportunities as regards time and space to organise surgical teaching and research. This obligation the Rockefeller Foundation had enabled them to fulfil, and the new surgical block was, he believed, unrivalled in the world. Sir John Gilmour spoke of the foresight and knowledge which had enabled the building to materialise, and expressed his gratification at being asked to open it. Prof. D. P. D. Wilkie, in moving a vote of thanks, said that unlike those in administrative control of certain other bodies of workers, his difficulty was not to exact certain hours of toil but to procure keys in sufficient numbers that any worker might be able to get access to the building to pursue his researches at any hour of the night. Workers in this department would include both intramural and extramural teachers. Indeed, the institute knew no wall but one—the wall of ignorance; breaches in this wall could be made only by continued and coöperative effort.

The delegates were entertained to dinner by the Royal College of Physicians of Edinburgh, Prof. G. M. Robertson, the President, taking the chair. Toasts included the town, to which the Lord Provost replied; the Faculty of Medicine, proposed by Prof. Tait Mackenzie, the Dean responding, and the President, proposed by Sir Alfred Ewing. A civic reception given by the Lord Provost, magistrates, and council concluded the celebrations.

The smoothness and dignity with which all the ceremonies were carried out under the wise guidance of Sir Alfred Ewing, Principal and Vice-Chancellor, impressed all the delegates, especially perhaps those representing less venerable institutions. They left Edinburgh heartened and stimulated by the signs of the deep influence that a big flourishing university can, in the course of time, exert on the life of a whole people.

## MEDICINE AND THE LAW.

### *New Dangerous Drugs Regulations.*

THE Home Office has given notice of its intention to amend the Dangerous Drugs Regulations in various important particulars, mainly in order to carry out recommendations in the report (issued last February) by the Ministry of Health Committee on Morphine and Heroin Addiction. Perhaps the most striking proposal is that of setting up a tribunal of three medical practitioners, assisted by a legal assessor, to decide charges of improper supply or possession of drugs against a doctor. At present the Home Secretary can, in cases of irregularity, withdraw a doctor's general authority to supply and possess, but he cannot do so until he has prosecuted the doctor under the Dangerous Drugs Acts and has obtained a conviction. As the Committee's report observed, when it is clear that in the interests of the public a doctor should lose his authority, it is undesirable that the Home Secretary should be obliged to chase him into the police-court to get a conviction. The mere withdrawal of the authority is often the appropriate penalty without the fines or imprisonment which a magistrate may inflict. Moreover, the issue in these cases is essentially medical—namely, whether the administration of the particular drug was or was not justified. It is therefore proposed to alter the regulations so that, if there is reason to think that a doctor is supplying, administering, or prescribing a dangerous drug to or for himself or anybody else otherwise than as required for the purposes of medical treatment, the Home Office shall be able to refer the case to the new tribunal. If the tribunal so recommends, the Home Secretary may, by notification in the *Gazette*, withdraw the doctor's authorisation and may exclude him from the benefit of the exception in Regulation 4 which allows the dispensing of drugs by doctors, dentists, and veterinary surgeons to be exempted from the general prohibition on supplying and procuring dangerous drugs. If the practitioner is thus excluded from the protection of Regulation 4, then he is definitely forbidden to give any prescription for the supply of such drugs. Regulation 5, which deals with the giving of prescriptions, is also to be amended. At present prescriptions must be in writing, signed and dated, &c., and must specify "the total amount of the drug to be supplied on the prescription." These latter words are to be elaborated into "the total amount of the morphine, cocaine, ecgonine, or diamorphine or any salt thereof to be supplied on the prescription, except that in the case of a preparation which is contained in the British Pharmacopœia, the British Pharmaceutical Codex, or the Drug Tariff issued by the Minister of Health for national health insurance purposes and which is not combined with any other preparation of any of the drugs not so contained, it shall be sufficient to state the amount of the preparation so contained." It is also proposed to add that a practitioner shall give a prescription only when required for purposes of medical treatment.

The Ministry of Health Committee devoted attention to the possibility of detecting cases where a patient obtains the drug of addiction from two or more doctors concurrently. With this object in view the Home Office proposes to amend Regulation 7. That regulation sets out the occasions when possession is not illegal. One of those occasions is when the possessor proves that the drug was supplied for his use by a medical practitioner or on and in accordance with a lawful prescription. The amendment proposed is apparently—for its language is not very clear—the removal of this protection for the possessor if he is under treatment from a doctor for addiction to any of the drugs or otherwise and is being supplied by a second practitioner and does not disclose the fact. Another change is to cause all doctors, dentists, and veterinary surgeons, if not already obliged to do so under Regulation 9, to enter in a separate register, in the case of each supply, purchase, or other obtaining of drugs, particulars of the date of receipt of supply, the name and address of the person, body, or firm from whom it is obtained, the amount obtained, and the form in which it is obtained. This will remove a doubt which has been expressed in certain recent prosecutions. A final proposal is that everyone authorised under Regulation 10 to carry on the business of manufacturing, selling, or distributing the drugs must keep them in a locked receptacle of which he himself or a qualified assistant holds the key.

It will be understood that these proposals are not yet law. The Home Office at this stage merely gives 40 days' notice (under the Rules Publication Act) of its intention to make these amendments. It has a statutory duty to consider any objections offered to the proposals, but is not obliged at the end of the 40 days to make the amendments, if there have been no objections, in the same terms as those which it has now advertised. The proposals appear to be a reasonable endeavour to implement the Committee's recommendations, though it remains to be seen whether they will work successfully.

### *Suicide as Murder.*

Last March a man who had been "keeping company" with a girl of 18 bought a small bottle of "lysol" disinfectant, apparently with the object that the pair should poison themselves and die together. Next day he and the girl drank the bottle. The girl died in hospital but the man recovered. He was tried at Liverpool Assizes on a charge of murdering her. As is stated in Stephen's Digest of the Criminal Law, "a person who kills himself in a manner which in the case of another person would amount to murder, is guilty of murder." It is further the law that, if A aids, abets, or counsels B to kill himself, A may be tried for murder. This is the result of Section 1 of the Accessories and Abettors Act of 1861, which enacted that anyone who becomes an "accessory before the fact" to a felony may be tried and punished in all respects as if he were a principal felon. At the trial at Liverpool the man was convicted; he applied to the Court of Criminal Appeal for leave to appeal against conviction. The ground of the application was that the judge directed the jury inaccurately upon the law of "suicide pacts." The judge had apparently stated that, if two mutually agree to commit suicide and accordingly take poison and one of the two dies, the survivor is guilty of murder. On behalf of the appellant it was objected that the statement was too sweeping; the survivor might have been forced into the suicide pact; the appellant, it was said, acted under the influence of the girl. The Court dismissed the application. The Lord Chief Justice observed that the man was with the girl at the critical moment; it was he who had purchased the poison; he had aided and abetted her. It was impossible to say that the summing-up was inadequate.

If the suicide pact were between husband and wife and the wife survived, she would, it seems, be technically guilty of murder. The Criminal Justice Act of 1925 (by a section which came into force on June 1st) abolished the old presumption that an offence committed by a wife in the presence of her husband was committed under coercion. The section adds, it is true, that actual proof that the husband was present and did in fact coerce his wife shall be a good defence on a charge against the wife, but this concession does not apply to offences amounting to murder. The new Act also alters the law of suicide by giving power to magistrates to dispose summarily of cases of attempted suicide instead of sending them necessarily for trial on indictment before a higher court. The new method (already applied in the first week of June to the case of a domestic servant who had taken poison apparently on being reprimanded by her mistress) is merciful and speedy and avoids unnecessary expense and publicity.

### *Duties on Obsolete Specifics.*

Year after year Parliament imposes excise duties upon a remarkable list of some 500 proprietary medicines and specifics more than a century old. The list begins with "Adam's Solvent" and ends with "Zimmerman's Stimulating Fluid." Already at the end of the seventeenth century the proprietors did not disdain alliteration's artful aid. There are pills, pastes and powders, drops, lotions, salves and essences whereof the very names breathe the atmosphere of romance or the suggestion of salvation "Birt's Martial Balsam," "Bourne's Ethereal Essence," "Hayward's Samaritan Water," "Ormskirk Medicine for the Bite of a Mad Dog"—the curious will find them all in the schedule to the Medicines Stamp Act of 1812. The list had been varied or re-enacted in 1802 and 1804, to go no further back into the mists of antiquity; but since 1812 there seems to have been no change. There the schedule remains upon the statute book by virtue of a few words in the annual Finance Act continuing the medicine duties as before. A year ago in the discussion upon the Finance Bill Captain Wedgwood Benn appealed to the Treasury to codify the Acts upon this subject so as to save the taxpayer the labour of antiquarian research. A sympathetic answer was given but nothing was done. Recently, on June 7th, Captain Benn renewed his appeal. In reply Mr. Ronald McNeill, the Financial Secretary to the Treasury, admitted that a drastic revision of the Acts was necessary. He added that it was intended in the near future to assemble an inter-departmental committee to examine the superfluity of ancient and obsolete enactments containing the specifics which are liable to medicine duty. He was able to instance the "Elixir of Longevity or Swedish Preservative," which is still mentioned in the statute book but which, though it may have been the cause of longevity in others, has not managed to preserve itself. The suggested reform is overdue. If such a list is necessary, machinery should be created for its revision from time to time with expert assistance. Were a list of 500 contemporary specifics to be compiled to-day from among our proprietary remedies how would it strike a reader in the middle of the next century?

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**Puerperal Infection and a Nurse.**—At an inquest held on June 8th by Dr. M. H. Taylor, the Kingston coroner, on the body of a woman 33 years of age, death was recorded as due to puerperal septicæmia. The coroner stated that during the last six months he had held inquiries into the death of seven women from puerperal septicæmia who had been patients in the nursing home or attended by nurses of the Kingston Nursing Association. All the cases he had investigated, he said, had followed each other in such a way that there was no doubt that the infection was carried to the patients by the same nurse. He is reported to have added his opinion that 24 hours' quarantine was not sufficient in a case in which a nurse had been in contact with puerperal septicæmia. The Nursing Association's solicitor stated that the Ministry of Health had been approached with a view to an inquiry into the case.

# Public Health Services.

## RANGE OF MEDICAL SERVICE UNDER THE N.H.I. ACTS: TREATMENT BY CARBON DIOXIDE SNOW.

THE Medical Benefit Regulations define the range of medical service under the National Health Insurance Acts. The practitioner, they declare, is required to give his panel patients treatment comprising "all proper and necessary medical services other than those involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess." A question recently arose in Kent whether treatment of a verrucous condition of the sole of the foot near the first interdigital space by means of freezing with $CO_2$ snow was within the range of medical service. The Minister of Health, acting under Article 38 (4) of the Medical Benefit Regulations, remitted the question to referees, and the referees have answered it in the affirmative. The judgment of the referees states that the case was not urgent except that the verrucous condition was causing pain and lameness. The question was whether the process of packing the snow into the form of a "pencil" and its local application for cauterisation called for special skill or not. The Ministry contended that the skill required was no more than that involved in applying other forms of cautery—nitric acid, caustic, or electrolysis. No special training seemed necessary. Of the witnesses who supported the view of the Ministry Dr. H. B. Brackenbury and Dr. S. O. Pritchard had seen it applied once before they used it themselves; Dr. E. W. Adams had merely relied upon a friend's description, and Dr. Adam, Fulton upon a reference in a medical journal and upon the printed instructions. Dr. Gordon Ward, who appeared for the Local Medical Committee, submitted the contrary view. He called no witnesses but argued that the treatment did require special skill in seeing that the "pencil" was well rammed and compact and that its size was properly adapted to the size of the lesion, and in the degree of pressure to be exercised (over a bone or otherwise), the length of time of application and the discretion as to repetition. He made the further points that, the treatment being alternative to other forms of cautery, there was no particular reason to expect a general practitioner to acquire the necessary technical knowledge of it, and that many practitioners would not have acquired such knowledge before becoming qualified since the treatment was not introduced into this country until 20 years ago. In deciding the issue whether a particular service is one which involves special skill and experience, the regulations direct that regard is to be had to the question whether the service is one which is or is not usually undertaken by general practitioners practising in the same area. Dr. Ward addressed a questionnaire to 371 panel doctors in Kent upon this point with the following result: 46 per cent. said they were acquainted with the technique of treatment by carbon dioxide snow; 24 per cent. said they employed the treatment among their patients; and 18 per cent. said they possessed the necessary apparatus. These statistics did not prevent the tribunal from being unanimous in holding the treatment to be within the "range of medical service" which presumably expands from time to time but never contracts. The two medical members of the tribunal were Dr. G. Collingwood Andrews and Dr. John F. Walker; the chairman was Mr. E. H. Tindal Atkinson, barrister-at-law.

## SANITARY OFFICERS ORDER.

An Order issued by the Ministry of Health, which came into force on June 1st, reproduces in general the provisions of the Sanitary Officers Order of 1922, but prescribes some changes with regard to qualifications of sanitary inspectors. For the f the certificates of the Royal Sanitary Institu of the Sanitary Inspectors Examination Joint Board will be required, subject to the rights of holders of other certificates. A veterinary surgeon may be appointed a sanitary inspector for (say) the inspection of meat only, but the Minister expresses his opinion that such veterinary surgeons should possess a diploma in veterinary State medicine or have had special experience in practical meat inspection. The Order deals with both qualifications and duties and applies to all medical officers of health and sanitary inspectors appointed in the administrative County of London, but outside London only to officers whose appointing authority desires to recover half the salary from the county council or the Exchequer. In the case of a medical officer of health, it is apparently open to the appointing authority to make an appointment not to the approval of the Ministry by forgoing the repayment of the half salary for three years, at the end of which time the medical officer, unqualified by a diploma in public health, will have acquired a qualification by three years' service. There is general agreement that medical officers of health should be independent of the conflicting ties of private practice. Whole-time appointments can be readily secured by combining small districts or by adopting the Hampshire scheme of appointing county assistants to be local medical officers of health, or the Essex scheme of appointing local medical officers of health to carry out the county health services for their own district. The advantage of appointing whole-time veterinary surgeons, free of the ties and obligations of private practice, to carry out the provisions of the new Milk Act is also quite clear. If new legislation is needed to secure that all sanitary officers shall in future be fully trained for their work and devote their whole time to it, the sooner it is passed the better.

## REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1925 of a group of districts of varying status. The death-rate from heart disease is stated separately, because of its direct bearing on the prevention of rheumatism in childhood, which is becoming a definite feature in the programme of up-to-date sanitary authorities.

| Name of district. | Estimated mid-year population (R.-G.). | Birth-rate. | Death-rates per 1000 of the population. | | | | | Death-rates per 1000 births. | |
|---|---|---|---|---|---|---|---|---|---|
| | | | All causes. | Tuberculosis. | Cancer. | Resp. diseases with influenza. | Heart disease. | Infant mortality. | Maternal mort. from childbirth. |
| Wiltshire C. .. | 295,800 | 16·7 | 11·2 | 0·68 | 1·60 | 1·6 | 1·8 | 53 | 3·3 |
| Reading C.B... | 93,670 | 16·1 | 11·1 | 0·92 | 1·28 | 1·6 | 1·5 | 56 | 4·6 |
| Barnstaple R.D. | 18,490 | 14·6 | 12·8 | 0·65 | 1·51 | 1·4 | 1·8 | 66 | 0·0 |
| Bridgwater B.. | 16,410 | 17·8 | 13·9 | 0·91 | 1·64 | 3·4 | 1·7 | 82 | 6·8 |
| Bognor U.D... | 12,800 | 13·6 | 9·1 | 0·39 | 1·10 | 1·5 | 1·7 | 34 | 11·5 |
| Chingford U.D. | 10,310 | 15·6 | 8·3 | 0·30 | —* | —* | —* | 43 | 0·0 |
| Stowmarket U.D. .. | 4,250 | 17·6 | 16·0 | 1·17 | 1·88 | 5·2 | 0·94 | 40 | 0·0 |

C. = County. C.B. = County borough. B. = Borough. U.D. = Urban district. R.D. = Rural district. —* = Information not in report.

### *Wiltshire.*

Dr. Claude E. Tangye tells us that social conditions and occupations are on the whole favourable to public health, and that, with the exception of Swindon, there is no approximation to the conditions of the manufacturing areas of the north. Urban districts [illegible] racter of country towns. Three diseases show special incidence, rheumatoid arthritis amongst farm workers, goitre amongst school-children, and pulmonary tuberculosis amongst factory workers. Overcrowding is still common, but deaths from infantile diarrhœa are comparatively few.

A considerable proportion of the metropolitan milk-supply is produced in this county, so that recent legislation considerably affects administrative activity. Prior to the end of 1925, five notices were received from the L.C.C. under Section 4 of the new Milk Act. There was difficulty in tracing the sources of infection, but ultimately, early in 1926, cows had been found giving tuberculous milk on four out of five farms reported, and in the fifth case the cow had probably been slaughtered before the receipt of the report. At first work under this Act was carried out by the veterinary surgeons appointed under the Diseases of Animals Acts, but now the county council has decided to appoint a veterinary surgeon for the Milk Act to serve the whole of the county, other than the area of his private practice. The Agricultural Committee of the county council granted three "Grade A" licences to producers during 1925, whilst the Ministry have granted two "Certified" and seven "Grade A (tuberculin-tested)" licences in the county. Dr. Tangye has no information as to "Pasteurised" licences, which are in the hands of the local sanitary authorities. The administration of the Meat Regulations, 1924, is fairly good in some towns and very lax in others. Producers with live-stock for disposal prefer the laxer districts. Dr. Tangye thinks sanction to the appointment of meat inspectors should be conditional on their holding proper qualifications. The Public Health Committee offered to provide free tuition in meat inspection at Bristol. Sixteen of the 35 inspectors were allowed to attend by their authorities, who paid their travelling expenses. Of the 16, six sat for the Meat Certificate of the Sanitary Institute and five obtained this qualification. Nine of the 35 inspectors now hold a qualification.

During the last five years five local authorities have installed modern bacterial sewage works and two more new schemes are in hand. In addition, three authorities have completed extensive alterations and improvements. The towns of Wiltshire have good water-supplies, but many of the villages "are dependent upon wells which have become hopelessly polluted, and others are dependent upon rain water only." During each of the last two years 12 cases of encephalitis lethargica have been notified and last year seven deaths resulted. The county laboratory has now been dismantled and bacteriological work for the county council is carried out at the Salisbury General Infirmary and the Royal United Hospital, Bath. Certified midwives attended 67·6 per cent. of the births in the county as compared with 66 per cent. during 1924. Dr. Tangye reports a remarkable decrease in "unqualified" midwifery practice.

### *Reading.*

Dr. H. J. Milligan's report is cheerful. The local occupations are not injurious to health. Infant mortality is lower than in most centres, although a little up in 1925 owing to whooping-cough. Health services are in a satisfactory state. An extension of the infectious hospital to provide 26 beds is in progress. There is provision for nearly every case of tuberculosis, usually without delay, the only want being accommodation for advanced female cases. Centres for maternity and child welfare work are established in every quarter, capable of meeting all demands. The municipal maternity home (13 beds) is to be improved by the provision of additional accommodation for staff and for isolation. The work of the antenatal clinic does not show a progressive ncrease, the new patients for 1925 (245) being two less than in 1921, 1923 being the "peak" year with 283 cases. Dr. Milligan's comment is that the midwives of the town ought to take more advantage of this clinic. The shortage of houses is still acute. At the time of the Census 2000 houses were occupied by more than one family and it is doubtful if the number has been much reduced since.

The large percentage of tuberculous milks found during the year is "a further argument for the use of designated milk from tubercle-free herds." Out of 35 samples examined six were found to contain living tubercle bacilli. The positive results affected five herds. In four cases the offending animal was found and slaughtered, and in the case of the fifth herd old beasts had been sold for slaughter after the taking of the sample. In 1925 the death-rate from tuberculosis reached a lower point than ever before, and Dr. Milligan is of opinion that the pavilion for the reception of advanced male cases is of special value. The water-supply is derived from the Kennet. The river water first undergoes coarse filtration and then fine filtration and chlorination to the extent of ½ to 1 part per million. Regular bacteriological examination shows that *Bacillus coli* is constantly absent in 100 c.cm. of the filtered water.

Practically the whole area is sewered on the separate system. Up to 1925 the sewage was pumped on to Manor Farm and distributed by broad irrigation, but the effluent discharged into the Kennet was not satisfactory. During 1925 an activated sludge installation was completed, but it is as yet too early to express a final judgment on the efficiency of the new scheme. The Education Committee has under consideration the extension of facilities for dental treatment and the provision of more commodious premises for the school medical department. Good results are still reported from ionic medication of ear discharges.

### *Barnstaple.*

Dr. J. R. Harper says a further improvement in the general health of the rural district and a more rapid diminution of tuberculosis is assured when the old cottage property has been replaced by modern and sanitary dwellings. The North Devon Infirmary, a modern hospital with an up-to-date X ray plant, is to open a maternity department within a few weeks. There is no hospital for infectious diseases, but the county council makes provision for small-pox. The Combe Martin water-supply problem has not yet been solved and is an urgent matter in view of the summer influx of visitors. The Woolacombe sewerage system has broken down several times during the year. The outfall becomes blocked and the sewer joints are forced. The sewer is privately owned. In August there was an outbreak of food-poisoning in a boarding house in Countisbury, affecting 35 persons and causing one death. The origin was traced to meat infected with *Bacillus aertrycke*, and after the lapse of three weeks a second outbreak affecting four persons was proved to be due to a member of the staff who had recovered but was a carrier of this bacillus.

### *Bridgwater.*

Housing is the subject of paramount importance in this ancient borough, the charter of which dates back to 1200, and Dr. G. W. Harvey Bird states that a programme of new buildings has been adopted and is being vigorously pushed forward by the council. A "great scheme" would be needed to deal with the narrow streets. Of the 24 infant deaths, which give an infant mortality-rate seven higher than that of England and Wales, 11 were due to congenital defects, eight to bronchitis and pneumonia, and two to whooping-cough. An effort has been made during the year to improve methods of milk production and distribution, but the council has had no applications for licences to produce designated milk. A demand for Grade A milk, distributed by a producer-retailer licensed by the Somerset County Council, is increasing, and this milk is supplied to the Isolation Hospital and the Baby Hospital.

### *Bognor.*

Dr. T. Philips Cole has laid stress in his last two reports to his urban district council on the importance of antenatal clinics, but up to the present expectant mothers have not appreciated the advantages offered. The water-supply is from deep wells about four miles north of the town and the water company are laying an additional service main to meet growing requirements. The sewerage service will soon require extension. At present the sewage is pumped to storage tanks, from which it can be discharged from one hour before to five hours after high water without polluting the foreshore. The extension can be dealt with in three ways—viz., by increasing the tank capacity, by keeping out storm and surface water, or by creating new works at the western end of the district. Since 1920 progress has been made in housing and the types of house most needed—viz., four and five-roomed houses—have been provided. Dr. Cole deals with the milk question at length. The veterinary surgeon inspects farms outside the district by consent. Since the Tuberculosis Order came into force he has been able to report 14 tuberculous cows to the county council, most of them with udders affected and two markedly emaciated as well. Bognor had a sunshine record for 1925 of 1885·5 hours, and claims to have a high percentage of winter sunshine when compared with the leading winter health resorts.

### *Chingford.*

Dr. Malcolm Barker mentions that a new sewage disposal scheme has been prepared by the urban district council and is under the consideration of the Ministry. This would take the place of the present sewage farm. The methods for disposing of refuse also have to be considered, owing to the rapid growth of Chingford. Between May 18th and June 30th a veterinary surgeon examined the 104 cows in the district. He took 23 samples of milk from individual cows with suspicious symptoms and 10 samples of mixed milk. The bacteriologist reported an excess of pus cells from nine cows, and five cows were removed from the milking herds. No tubercle bacilli were found in any of the samples, but no mention is made of the employment of the biological test or when the examination is to be repeated.

### *Stowmarket.*

Dr. S. O. Hounsfield says housing is the main urgent matter which requires immediate attention in this urban district. "Nearly all our cases of tuberculosis occur in these overcrowded, damp, or badly lighted and badly ventilated houses." Influenza and measles beginning in February, and the severe weather with more influenza in November, accounted for the very high death-rate from all causes and from diseases of the respiratory system.

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## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 5TH, 1926.

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 219 (last week 193); scarlet fever, 1236; diphtheria, 749; enteric fever, 58; pneumonia, 1011; puerperal fever, 52; cerebro-spinal fever, 8; acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 44; continued fever, 1; dysentery, 3; ophthalmia neonatorum, 122. There were no cases of cholera, plague, or typhus fever notified during the week.

*Deaths.*—In the aggregate of great towns, including London, there were 4 (0) deaths from enteric fever, 35 (8) from measles, 7 (2) from scarlet fever, 27 (2) from whooping-cough, 25 (8) from diphtheria, 40 (11) from diarrhœa and enteritis under 2 years of age, and 80 (9) from influenza. The figures in parentheses are those for London itself.

SMALL-POX IN BLACKBURN.—Two cases of small-pox were discovered in the Blackburn Poor-law Institution on June 7th, and further two cases on June 8th. Dr. O. M. Holden, medical officer of health for Blackburn, informs us (June 12th) that no more cases had as yet arisen in the Institution and no cases had occurred in the town. The notified cases were immediately removed to the small-pox hospital, all contacts were vaccinated to the number of over 500, and the Institution was closed to visitors. Daily inspection of all common lodging-houses in the town was initiated, and also a daily inspection of the houses of all residents who were in any way connected with the Institution. The source of the infection, Dr. Holden adds, has not been discovered, but it is suspected that it was brought in from an infected area by some casual, as all four cases had been inmates for several months.

# PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

## OPENING OF NEW PHARMACOLOGICAL LABORATORIES.

On June 16th the new pharmacological laboratories at 17, Bloomsbury-square, London, W.C., were opened by the Minister of Health.

The laboratories comprise four large and well-lighted rooms above the Examination Hall of the Pharmaceutical Society; additional rooms will become available as the laboratories develop. One room is at present used for the testing of the heart stimulants—digitalis, strophanthus and squill—and for research work. The next room contains, among other apparatus, that needed for testing the strength of pituitary extract and of the various preparations of ergot. A third room will be utilised if it is decided to add a vitamin-testing department to the laboratories. The remaining space is devoted to the housing of experimental animals in bright and hygienic surroundings.

### *The History of the Laboratories.*

The introduction of the Therapeutic Substances Bill into the House of Lords in 1924 indicated that there was a likelihood of standards being fixed for a number of therapeutic substances which could only be standardised by biological means and for which there were no standards in the British Pharmacopœia. The Council of the Society saw that the Bill opened up a field of work in which the Society might usefully participate, and decided to explore the possibility of equipping a laboratory in which some at least of the testing contemplated in the Bill might be carried out. The Ministry of Health and the Medical Research Council approved this project, and an Advisory Committee was constituted, including representatives of the Council and the Science Committee, the General Medical Council, the Medical Research Council, and the British Medical Association. Upon the recommendation of this Committee, the Council appointed as director Dr. J. H. Burn, of the Department of Biochemistry and Pharmacology of the National Institute for Medical Research, and the laboratories have been set up under his direction.

By the Therapeutic Substances Act (1925) any of the manufacturers who wish to prepare substances named in the Act must comply with certain regulations. The substances comprise (*a*) vaccines, sera, toxins, antitoxins, and antigens; (*b*) salvarsan and analogous substances; (*c*) insulin; (*d*) pituitary extract. Salvarsan can still only be manufactured under a licence from the German patentees. The patent rights, however, shortly come to an end. Similarly, insulin can only be made by those having a licence from the M.R.C. Pituitary extract may be manufactured without regard to patent rights. Arrangements are now complete for the testing of pituitary extract and of other substances considered by the Geneva Conference—namely, digitalis, strophanthus and squill, and ergot. It will be the aim of the laboratories to be able to accept for testing all substances which appear in the schedule of the Act, and in addition those which the progress of science indicates are likely to be included.

The laboratories were established with three primary objects: For research work upon the pharmacological testing of drugs, for training pharmacists in that work, and for the commercial testing of drugs for manufacturers. It will obviously be advantageous for manufacturers to take advantage of the facilities offered. The commercial value of a statement on the label of a preparation that it has been biologically tested by the Pharmaceutical Society of Great Britain, and has been found to correspond with a definite amount of a standard sample, does not need to be emphasised. The laboratories should be of value, in particular, to manufac[illegible]re unable to test their own products.

### *The Opening Ceremony.*

The President of the Society, Mr. P. F. Rowsell, in introducing the Minister of Health, said that so far the Society and pharmacists generally had not taken any very active part in the pharmacological testing of drugs. It was fitting, however, that the Society should take its share in this latest branch of medical science, especially since, with the institution of the Degree in Pharmacy by the University of London, the possibility of pharmacists with these higher qualifications undertaking this work became more clear and defined. The Society was responsible for the training and examination of pharmacists; it had always been its aim to ensure that training should be progressive, and that pharmacists should keep abreast of the changes which took place from time to time in medicine. The Society had been fortunate in securing as director Dr. Burn, whose vast experience in this work at the National Institute of Medical Research had placed the laboratories already in a position to test five classes of preparations.

Dr. Burn said that the service which the laboratories hoped to give would be based principally on the regulations of the Therapeutic Substances Act, in order that manufacturers might successfully comply with those regulations. The laboratories' smoothness of working was also closely connected with the Conference held at Geneva last year under the League of Nations. From time to time some manufacturing pharmacists had criticised biological testing as unreliable. The Geneva Conference had ended the state of affairs which justified such criticism. The guiding principle had been adopted of stating the result of a test on a sample in terms of the effect produced by a standard, and no longer in terms of the reaction of biological material.. Dr. Burn referred to the great part which Dr. H. H. Dale had played in the recent progress in biological assay. The Geneva Conference might properly be described as Dr. Dale's Locarno, since a body of internationally renowned scientific men might be just as intractable as a similar body of diplomatists. Criticism of biological assay had also been made by some medical men, who asserted that there was no evidence that the properties measured in the laboratory are identical with those required by the clinic. Work directed by Dr. Dale had produced a brilliant answer to the criticism in the case of both neo-salvarsan and of insulin. It had been shown beyond question for these agents that the laboratory test for potency was also a measure of the value to the patient. Dr. Burn expressed his hope that research would be the most important side of the laboratories' activities, since the imagination, the perseverance, and the enthusiasm inspired by research were of the greatest value in securing accurate biological assay.

Mr. Neville Chamberlain, Minister of Health, then declared the laboratories open.

# IRELAND.

(From our own Correspondent.)

### *Annual Meeting of the Irish Medical Association.*

The annual general meeting of the Irish Medical Association was held in the Royal College of Surgeons, Dublin, on June 9th, Dr. F. C. Purser, the President, in the chair. The Council had referred to the meeting a letter from the Irish Committee of the British Medical Association in which information was asked as to the present attitude of the Irish Medical Association towards it. The Irish Committee of the British Medical Association did not dispute the right of the Irish Medical Association to sever its connexion with the Irish Medical Committee, or to refuse to accept the resolutions of meetings of delegates, but it felt that it was due to the Irish branch of the British Medical Association, which possessed the largest membership of any medical association in Ireland, and in the Free State, that it should be informed formally of the decisions of the Irish Medical Association, so that it might, in the circumstances, be in a position to seek independent representation.

Senator W. O'Sullivan, Past President, proposed, and Dr. T. B. Costello seconded a resolution—

> That, in matters in regard to legislation affecting the interests of the medical profession in Ireland, it is advisable that the opinion of the profession should be expressed by an organisation representative of the entire profession, and in present circumstances this can best be done by the Irish Medical Committee.

After considerable debate the President, on consulting the standing orders, ruled the resolution ultra vires. The annual report of the Council was then presented. It was stated that the membership at the end of last year was 431. The accounts showed a balance in hand of £610. The result of the annual election was declared, Dr. Purser being re-elected as President and Dr. H. T. Warnock as Vice-President. Several committees were elected and the meeting adjourned.

Dr. Purser, the President, in his address, spoke of several matters of medico-political interest which had been engaging the attention of the Association during the past year. He believed that the scheme for medical registration and control in the Saorstát would be found to satisfy most people. The Executive Council had given the representatives of the profession a very fair hearing. Ample opportunity had been given for expression of views on every aspect of the controversy and even minor details had been considered without haste or hurry. The details of the scheme were still private. The Bill giving the selection of candidates for Poor-law medical appointments to an Appointments Commission was of the utmost importance. It was welcomed by this Association, for not only did it strike a blow at corrupt practice in elections, but it put the assessing of merit into the hands of those best qualified to assess it. Further, it would be welcomed as a step towards a State medical service, as it removed the chief stumbling-block in the way—namely, patronage of local authorities. It was greatly to be regretted that the system of graded salaries had not been adopted in all counties. In co. Mayo, for instance, the salaries paid were much below the salaries in the neighbouring and equally poor county of Galway. Urgent representations had been made to the Minister for Local Government d Public Health in this matter, but so far he uld not be induced to exercise pressure to remove is injustice.

### *The Local Authorities Bill.*

The Local Authorities Bill passed the Dail last ek without any serious modification, and it is not ely to be changed in the Senate. By this Bill l appointments (other than by promotion) under cal authorities will be made on the recommendation a special "Appointments Commission," who will, all cases other than technical or professional ppointments, make their selection by the method of mpetitive examination. A strong fight was made carry an amendment to the effect that the Appointents Commission should send a short list of itable candidates to each local authority, with hom the final selection would rest. This was defeated y a large majority.

### *Royal College of Surgeons in Ireland.*

The annual elections of the Royal College of urgeons in Ireland have resulted as follows:—esident: Andrew Fullerton. Vice-President: homas E. Gordon. Secretary: Sir F. Conway wyer. Council: Sir Thomas Myles, Sir Arthur hance, Sir Robert H. Woods, Richard Lane Joynt, r William Taylor, R. C. Butler Maunsell, Sir W. de C. Wheeler, Sir F. Conway Dwyer, Trevor Smith, Sir C. Arthur K. Ball, Louis A. Byrne, ton Pringle, Edward Sheridan, Adams A. McConnell, R. Atkinson Stoney, William Pearson, George E. Pugin Meldon, Howard Stevenson, Sir William J. Smyly. The new President, Mr. Fullerton, is surgeon to the Royal Victoria Hospital, Belfast, and professor of surgery in Queen's University. He was consulting surgeon in the Boulogne area during the war, with the rank of colonel in the Army Medical Service, and received various decorations. This is the first time that a Belfast surgeon has been elected to the Presidency of the College, and the first time for many years that any provincial surgeon has received the honour. Mr. Gordon, the new Vice-President, is surgeon to the Adelaide Hospital, Dublin, and professor of surgery in Trinity College. Both Mr. Fullerton and Mr. Gordon were elected without opposition.

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## NATIONAL INSTITUTE FOR THE DEAF.

THE annual meeting of the National Institute for the Deaf was held at the Mansion House, by the kind permission of the Lord Mayor, on Friday, June 11th, when Lord Charnwood presided over a large gathering. The report was read by the secretary of the Institute, Mr. A. J. Story; it showed that since the brief period following upon recent reconstruction the work of the Institute had been successfully carried on and that large provinces of future endeavour had not only been outlined, but a promising commencement of activity had been made. The directions of the work as shown by the report included coöperation with the necessary authorities in securing the expert medical attention and advice necessary to obviate improper classification of deaf subjects as mentally unsound, and especially for the inquiry into the condition of deaf children who are too often believed on account of their physical defect to be mentally deficient and so wrongly categorised. The report also showed the many directions in which deaf subjects, if educated, could be employed to their own advantage and that of the community, and disclosed the need for public pecuniary support.

Lord Charnwood, in moving the adoption of the Report and Accounts, emphasised the fact that the Institute was the only body attempting to coördinate and correlate the work of the many institutes, agencies, and centres that had been started, mostly of recent date, to improve the welfare of the deaf, to educate them so that the one barrier between them and their fellow citizens should be at least partially thrown down, and to secure for the many competent deaf people employment despite their disability, which in so many cases should not really be considered a handicap.

The adoption of the report was seconded by Sir Squire Sprigge, who analysed the reasons why the deaf population did not secure the proper amount of public sympathy. He pointed out that medicine was now having considerable success in the prevention of deafness by the early and appropriate treatment of the sequelæ of infectious diseases, and he believed that the medical profession would welcome the opportunities offered to associate themselves with the work of the Institute, especially in the task of inspection, so as to guard against wrongful diagnoses among the sane of mental abnormality.

The adoption of the report having been unanimously carried, the Duchess of Atholl proposed:

> "That this meeting, interested in the welfare of the deaf, desires to call attention to the many and severe handicaps in the lives of those who suffer from deafness; and earnestly commends the work of the National Institute for the Deaf and that carried on by local societies for the deaf in some 70 districts of the United Kingdom to public sympathy and support."

She outlined the claims for public sympathy with the deaf, and speaking from experience at the Board of Education, she reminded the meeting how much good had been done by the treatment of early ear troubles, and, therefore, in the prevention of deafness, through the systematic attention to the ears of the school population.

The resolution was seconded by the Dean of Westminster and was unanimously agreed to.

A resolution was then proposed by Lady Robson as follows:

> "That whereas deafness overtakes large numbers of persons in adult life with the result that many of them become deprived of their employment, this meeting begs employers to consider whether by adjustments of staff they can retain such persons in their service and thus prevent the addition of the burden of idleness and want to the already heavy burden of deafness."

This, which was seconded by Sir Harry Stephen, was also agreed to unanimously, and the meeting closed with a vote of thanks to the chairman.

# Correspondence.

"Audi alteram partem."

## THE QUESTION OF SPECIAL DIPLOMAS.

*To the Editor of* The Lancet.

Sir,—From time to time vacancies are advertised in the columns of the medical journals, one of the conditions of candidature being the holding of one of the special diplomas. We learn that the D.P.H. is an extremely useful additional qualification, the possession of which is indispensable to those who wish to become school medical officers or medical officers of health. The D.T.M. is almost compulsory to would-be officials of the Colonial Medical Services or workers in the tropics, special pay being promised to the holders of this extra qualification in many cases; and it is useless to try for any tea- or rubber-estate appointment without it. The possessors of the D.M.R.E. hold the fort as regards vacancies on the electro-therapeutic or radiological staffs of our large hospitals and institutions, and the D.P.M. has become the sine qua non for all who propose to specialise in mental or nervous diseases and whose intention it is to get on the staffs of our large asylums. Diplomas in tuberculosis diseases—i.e., D.T.D.—are now expected of tuberculosis officers, and further special courses and qualifications are now being advanced for bacteriology and every other side line in medicine and surgery.

The question now arises—why are these demands being made? The answer is surely, that the holders of these special diplomas are recognised by the various authorities as being more highly qualified or specialised to hold certain posts than could be those medical men who are not so trained. This being a fact, how is it that these qualifications with one exception—i.e., the D.P.H.—are not registrable. It does not appear that those responsible for this oversight quite realise that it not only takes time and money, but an intensive training and stiff examinations before these diplomas are obtained, and that they are only granted by recognised examining boards and universities. Why, then, should these diplomas remain officially unrecognised? Who is responsible? What antiquated machinery refuses to move? It is quite time that all qualifications legally gained by hard preparation and after due examination should be registrable as "extra qualifications," providing the holders are already qualified to be admitted to the Medical Register.

I do not know of any actual hardship which has accrued to the holders of these special diplomas on application for posts owing to the fact that special diplomas cannot be registered, but it is clear that serious inconvenience may arise and probably has arisen. For example, a medical man when travelling applies for a vacancy and his personal statement of possessing a diploma is rightly not accepted, yet no one usually carries his diplomas about with him. The possession of a non-registrable special diploma may be supported by an entry in the Medical Directory, but absence of its registration in the Medical Register, the official roll of the profession, might make it necessary for an applicant to prove his identification and statements. Employers recognising the value of these special qualifications often demand them, even when not obliged to do so by the rules which govern the appointments, and are put to extra trouble and correspondence to ascertain that an applicant has the special training required, and this only because he is not registered as holding some diploma which he claims to possess.

I can quite understand that new legislation is necessary to set this matter right, and it seems to me that the initiative might well come from the statutory bodies which grant the diplomas. A few weeks ago the Society of Apothecaries was told that the right to grant a registrable diploma in midwifery could only be acquired by legislation, so that the situation should be clear to all the statutory bodies. There is also support for the reform to be found in the fact that degrees taken in special branches of medicine—i.e., M.D. (State Med.), M.D. (Trop. Med.), and M.D. (Psych. Med.)—are registered; if the degrees why not the diplomas?

I am, Sir, yours faithfully,

C. Russell Corfield, M.D. Brux.,
L.M.S.S.A. Lond., D.T.M. Liverp.

Lincoln, June 14th, 1926.

*** We have reason to believe the General Medical Council is perfectly willing to register the special diplomas but little enthusiasm has been manifested by the statutory bodies issuing them to press for the new legislation which would be necessitated. The D.P.H. is registrable by the Council whose ruling on the cognate curriculum is therefore binding on the educational bodies concerned. Some of these might object to loss of autonomy in the matter of special diplomas at present non-registrable. In regard to these the Council as the authority on medical education may pass resolutions but the examining bodies are not bound by them.—Ed. L.

## X RAY TREATMENT OF CANCER.

*To the Editor of* The Lancet.

Sir,—In the leading article on the X Ray Treatment of Cancer in The Lancet of June 12th, you were kind enough to make some references to my recently published book on "Radiotherapy in Relation to General Medicine" (Oxford Medical Publications). One quotation is: "To British radiologists the treatment of carcinoma of the womb is of little practical importance, for they never see it." Your inadvertent omission of the word *early* before *carcinoma* (see p. 97) might perhaps lead readers to believe that radiotherapeutists in this country take no interest in uterine cancer. The contrary is the case. We do our best for the inoperable and the recurrent cases, of which, unfortunately, there is a plentiful supply. Control of pain and hæmorrhage is usually possible, and in some instances restoration to apparent health for a period measured in months and occasionally in years.

I am, Sir, yours faithfully,

F. Hernaman-Johnson.

Harley-street, June 12th, 1926.

## "TOXIC (SUBDURAL) MENINGEAL HÆMORRHAGE."

*To the Editor of* The Lancet.

Sir,—We should like to thank Dr. C. P. Symonds for his comments in your issue of June 5th and to submit the following observations in reply:—

In the first place we agree that the term "subarachnoid" is a more correct anatomical description than "subdural." Dr. Symonds's suggestion that in one of our cases the blood came from a punctured vein has no application. All practitioners experienced in these matters will agree with us that there is no resemblance whatever between venous puncture blood and blood effusions such as the hæmorrhages we have described. We accept Dr. Symonds's evidence that a number of these hæmorrhages are due to aneurysm, but in our opinion the present state of our knowledge of the subject does not justify the assumption that all owe their origin to this condition. In our opinion the clinical histories of our cases and their response to treatment establish a strong argument in favour of a toxic origin. In our first case there were definite extra-meningeal signs of toxicity—viz., pleuro-pericardial friction and dilatation of the heart, which appear to us to be incompatible with a diagnosis of congenital aneurysm.

In the other two cases, cerebro-spinal fever was present in the area and the mode of commencement in both cases justified a preliminary diagnosis of meningococcal meningitis This disease is characterised by rapidity of onset in a large proportion of cases, perhaps particularly so during epidemic periods, and the commencement of these cases showed no material difference from the average experience. Both these cases were definitely toxic and showed a complete absence of localising signs other than meningeal We do not think a simple meningeal hæmorrhage would produce such clear clinical evidence of toxæmia, and while admitting the importance of the positive post-mortem findings in cases with somewhat similar signs and symptoms, we still hold our original view of our own cases

We are, Sir, yours faithfully,

A. G. BANKS
A. M. N. PRINGLE.

Ipswich, June 10th, 1926

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## IMMUNISATION AGAINST MEASLES

*To the Editor of* THE LANCET.

SIR,—In a leading article in your issue of May 22nd you speak of the production of active immunity in measles as being still in the experimental stage I think an account may interest you of my experience when in charge of the Maison Maternelle at Châlons-sur-Marne last year. Apart from the obstetric wards this institution contains a pouponnière of four wards for 38 babies and a ward for children of 1–4 years. During July, 1925, a severe epidemic of measles attacked every child in the latter. Two of them had broncho-pneumonia and all were severely ill. All inter-communication with the pouponnière was stopped and the ward and its staff were isolated On August 8th, at 5 P.M., Marcel M., aged 9 months, in Ward No 1 (13 babies) was found to have a temperature of 38 3° C., with running eyes, coryza, and redness of throat. Until this moment he had had no symptoms of illness and the morning and evening temperature had been normal. He was at once isolated, and on August 10th had a typical measles rash. On the same day three other babies in Ward No 1 began to cough and sneeze On August 11th Antoinette M., aged 5 months, in Ward No. 2 (17 babies) had a temperature of 39° C, but no running of the nose. On August 11th all the babies, except Marcel M received a subcutaneous injection of 3 c.cm of *sérum de convalescent de rougeole* from the laboratory of the Claude Bernard Hospital, Paris No baby developed measles Antoinette A., of Ward No 2, had a slight rash on August 15th, which lasted 24 hours Her temperature was then normal, she had no coryza, and was not isolated The babies continued to gain in weight and to digest well. Their general condition remained excellent There was no local reaction at the site of the injection and no elevation of temperature.—I am, Sir, yours faithfully,

EDITH M. PYE

June 10th, 1926.

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## CHRONIC DUODENAL AND GASTRIC ULCER

*To the Editor of* THE LANCET.

SIR,—May I reply very shortly to the letters appearing in your issue of May 22nd bearing upon the paper which appeared under my name on May 1st ? I am gratified by the kindness shown by Dr. Ryle and Mr. Adams in their criticism of what is acknowledged to be a very difficult subject. Mr. Adams (whose letter appears first) points out that according to my article I performed cholecystoduodenostomy where cholecystogastrostomy would have been the obvious thing to do. I omitted to record the fact that in both these cases a gastro-enterostomy had been performed without relief of symptoms. Mr. Adams also suggests that I do not believe in a rise of gastric acidity in gastric ulcer, and yet I claim to reduce it by cholecystogastrostomy. I wrote, "there is no characteristic wave at all," not that there is no wave. I ought to have emphasised the word "characteristic" and omitted the words "at all." I appreciate the well known and deservedly high place Dr. Ryle occupies in regard to analysis of gastric secretion, and I realise that his opinions are very valuable, but I am afraid I must differ from some of them. His chief complaint is that I do not value fractional analysis of gastric contents either before or after operation; more than this, he suggests that my experience of such analysis is very small. I do not think it necessary to add anything to what I said in my article with regard to my experience with the Reyfus tube, but as regards the rest I can assure Dr. Ryle the subject has been, and is being, adequately dealt with by the department of which I have control.

In answer to the very helpful letter from Mr. R. Leonard Ley in your last issue, I would say that American observers, using X rays, have shown that the stomach contents do not pass into the gall-bladder after the anastomosis, whereas by gastric analysis both they and we in Leeds have found that bile does pass freely into the stomach. Mr. Ley suggests that the performance of a modified Roux's operation whereby the divided proximal end of the jejunum is implanted into the stomach near the ulcer would ensure all the alkaline contents from the duodenum passing into the stomach I think this a brilliant suggestion. A somewhat similar operation was described by me (*British Journal of Surgery*, 1914) for traumatic rupture of the duodeno-jejunal junction, and no apparent physiological disturbance took place. I think, however, that the modified Roux's operation might prove formidable in the hands of many surgeons, whereas cholecystogastrostomy would prove easy. I am, Sir, yours faithfully,

L. R. BRAITHWAITE.

Leeds, June 3rd, 1926

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## HOMOGENEOUS RADIATION

*To the Editor of* THE LANCET.

SIR,—The homogeneous radiation is generally accepted among radiologists. It seems daring, therefore, to question it. Nevertheless, on physical grounds I believe it to be wrong. My argument is as follows. First let the following axioms be accepted: (1) That unabsorbed radiation is therapeutically useless. (2) Therapeutic effect is directly proportional to absorption. (3) Absorption can only occur when the wave-length of the radiations is in resonance with those of the atoms on which it falls This was first put forward by Grotthus and is now generally accepted.

Consider the physics of absorption for a moment. Atoms consist of positively charged nuclei with negatively charged electrons revolving round them. These negative electrons can only revolve round the nucleus in certain definite orbits. If the right type of radiation is supplied absorption occurs. That is the electron is changed from one orbit to another or if the stimulus is sufficiently great is ejected altogether. But "if radiation of inadequate frequency is supplied it cannot change the particle from one orbit to another, it will be ineffective and achieve nothing. The particle takes no notice of any but a whole quantum of energy. The quanta are not all of the same size. To remove a particle from orbit 1 to orbit 2 requires a large quantum. To remove one from orbit 5 to orbit 6 quite a small quantum suffices" (Lodge: Atoms and Rays).

My conclusion is that the ideal radiation is one consisting of widely different wave-lengths. Such a radiation would be capable of being absorbed by electrons revolving in widely different orbits. A step in this direction has already been taken by the combined use of radium and X rays. I think that an even wider spectrum than this is desirable The homogeneous radiation with its sharply restricted wave-length must have a restricted absorption. It has, however, the merit of facilitating depth dosage.

I am, Sir, yours faithfully,

RICHARD E. SADLEIR, L.R.C.P.I., D.M.R.E.

Dublin, June 11th, 1926.

## SNOW-BLINDNESS.

*To the Editor of* The Lancet.

Sir,—I should like to comment shortly on one small part of Dr. W. Stewart Duke-Elder's very interesting article in your issue of June 12th. He says that the commonest form of solar photophthalmia "is that experienced after exposure to bright sunlight on a snow-field—usually called snow-blindness." In my experience, and that also of other explorers with whom I have associated, bright sun-glare on the snow is much less likely to produce symptoms of photophthalmia than a comparatively dull diffuse light. It is rarely that one finds a snow surface uniformly flat, like a tropic sea, for instance, and in sunlight irregularities, such as pressure ridges and lumps of ice, cast deep black shadows and stand out clearly, to be seen with little effort. The eye rapidly adapts itself to sun-glare, and rarely requires any special protection. On the other hand, in a diffuse light there are no shadows and details of the surface are hard to pick out, so much so that men on the march will stumble into large obstacles, of which till then they were quite unaware. Under these circumstances snow-blindness sets in rapidly—one hour without goggles may be sufficient to produce painful symptoms which develop within two or three hours of exposure. The condition can be prevented by means of properly designed snow goggles. I have used Crookes' B glass and Euphos 3 and found them effective, but to be sure of prevention side glare must also be cut off—best by a gauze of very fine mesh. The greater liability in diffuse light is, no doubt, largely due to the increased accommodative efforts used in an attempt to pick out detail from the dull whitish grey surroundings, devoid of colour or shadow, but the facts that side glare may cause the condition, and that goggles are effective to prevent it, show that this is by no means the only factor. Crookes and Euphos glass certainly give greater definition in bright sunshine, but this is not the case, or the improvement is very little, in diffuse light. In fact, most cases which I have seen have been due to men removing their goggles to get a clearer view. Fogging from deficient ventilation may, perhaps, have been the commonest cause for their removal, but had the loss of definition been at all considerable, the tendency would have been to clean and replace them at once. I have noticed also in other circumstances—e.g., when being driven across snow-covered tundra over a made trail, where there was no call for great accommodative effort, that a diffuse light was more irritating to the eyes than bright sunshine.

The injurious external stimuli acting upon the eyes in light diffused through cloud and reflected from snow must, therefore, be greater than those of sunlight reflected from the same surface. Since ultra-violet rays are responsible for the photophthalmic effects it would appear that there is a higher percentage in diffuse than in bright sunlight, but whether this is an established physical fact I do not know.

I can heartily endorse Dr. Duke-Elder's remarks as to the painful effects and the miserable condition produced in so far as snow-blindness is concerned. As standard treatment I used cocaine 3 per cent. followed by zinc sulphate ¼ per cent. in tabloid lamellæ. Adrenalin and pituitary extract gave striking and instantaneous relief for a short time, but their use was followed by an intense aching of the eye-balls and violent headache.

I am, Sir, yours faithfully,

A. H. Macklin,

Late Surgeon, Imperial Trans-Antarctic and
Dundee, June 13th. Shackleton-Rowett Expeditions.

## TITLE OF APOTHECARY.

*To the Editor of* The Lancet.

Sir,—In your issue of June 12th, under the proceedings of the General Medical Council, there is mention of an honours certificate being granted in obstetrics by the Society. Has not the time arrived when the ancient title of "apothecary" as applied to practitioners of medicine be eliminated? I presume that it would be a rarity, if indeed not a curiosity, to chance upon a modern holder of the licence of the Society fulfilling the duties and practice of men who were so ably described by Dickens, Thackeray, Trollope and other writers as an apothecary; while to the malicious, jealous, and unsuccessful it has often been used as a lever to the holder's detriment. Honours certificates may have their uses, but if the Society would endeavour to eliminate this word and modernise its title the certificate would be enhanced; the divorce from the druggist would be as decisive as that from barber and surgeon of the old days. I would suggest the letters should be L.S.P.S.—i.e., Licentiate of the Society of Physicians and Surgeons, thus avoiding conflict with existing examining bodies.

I am, Sir, yours faithfully,

June 15th, 1926. General Practitioner.

⁂ *The practical suggestion has been made before* with no result. There are real difficulties in changing the titles of Corporations which possess charters, are referred to in Acts of Parliaments, and hold property. There is also the view that to-day the world knows that apothecary is an old-world designation not defining the duties of its holder; members of the Cordwainers' Guild do other things than cordwain, and Yeomen of the Guard are no longer only yeomen. But our correspondent points to a situation which may, none the less, prejudice the holder of the L.M.S.S.A.—Ed. L.

# The Services.

## ROYAL NAVAL MEDICAL SERVICE.

J. J. Cusack to be Surgeon Lieut.

### ROYAL NAVAL VOLUNTEER RESERVE.

The King has approved of the award of the Royal Naval Volunteer Reserve Officers' Decoration to Surg. Comdr. F. J. S. Heaney.

Col. W. P. Gwynn retires on retd. pay.

## ROYAL ARMY MEDICAL CORPS.

Lt.-Col. O. W. A. Elsner retires on retd. pay, and is granted the rank of Col.

The undermentioned to be Lt.-Cols.: Maj. and Bt. Lt.-Col. C. R. Sylvester Bradley, vice Lt.-*Col.* L. Wood (promoted), and Majs. S. E. Lewis, vice Lt.-Col. and Bt. Col. H. B. Fawcus (promoted), and G. A. Kempthorne, vice Lt.-Col. O. W. A. Elsner to retd. pay.

Capts. C. I. Hannigan and J. Grant-Johnston to be tempy. Capts. and temporarily relinquish the rank of Capt.

*General List.*—J. J. Seaton to be Temp. Lt. whilst empld. as a Dental Surg.

### RESERVE OF OFFICERS.

Capt. R. E. G. Phillips, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

### TERRITORIAL ARMY.

Maj. W. J. Harrison resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

Lt. R. Jackson, late R.F.A., to be Lt.

## ROYAL AIR FORCE.

Flight Lt. B. F. Haythornthwaite is granted a permanent commission in this rank.

*Flying Officer* A. A. Townsend is promoted to the rank of Flight Lt.

## INDIAN MEDICAL SERVICE.

Lt. Col. H. M. Cruddas to be Col.

Lts. Som Dutt and Dawarka Prasad Bhargava to be Capts.

Shankar Parasharam Jashi, Sukumar Dutta Gupta, Kaikhushroo Maneckji Barucha, Monowar Khan Afridi, and Gurbaksh Singh Chawla to be tempy. Lts.

The King has approved the admission to the Ind. Med. Serv. of the following and to be Lts.: Bhagwant Singh Nat and Chiranji Lal Pasricha.

# Obituary.

## SIR HENRY MORRIS, BART., F.R.C.S.,

### LATE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

WE regret to announce the death on Monday last of the distinguished surgeon and professional leader Sir Henry Morris. He had been in bad health for some little *time, and an attack a few weeks ago* occurring at his advanced age indicated the probability that his life would not long be spared.

Henry Morris was born in 1844, the son of a medical man, William Morris, who practised in Sussex, and the grandson of a medical practitioner in North Wales. He received his preliminary education at Epsom College. He was one of the first 100 entrants at the new institution with the interests and advance of which

SIR HENRY MORRIS

his name will always be intimately associated; his date of entry was October, 1855, the head-master being the Rev. Dr. Thornton. From Epsom he proceeded to University College, London, and graduated in arts at a very early *age, later* joining the medical school at Guy's Hospital. He took the M.R.C.S. in 1866 and in 1873 the F.R.C.S., while he had already graduated in medicine at London University. He filled the resident posts at Guy's Hospital, and in 1870 was elected surgical registrar at Middlesex Hospital, thus commencing his long association with that institution. In the *following* year he was elected assistant surgeon to the hospital, on the staff at which time were, among others, Hulke and Douglas Powell (each like himself destined to preside over one of the great corporations), Lawson, Caley, and T. S. Cobbold, all names associated with various victories over disease. In his capacity both as teacher and surgeon he rapidly made a name for himself. He was extremely well read as well as clear, his undergraduate studies in moral philosophy and logic standing him in good stead, and under his peremptoriness of manner there lay a real desire to help the students in laying foundations of scientific knowledge along the path of surgery. He was elected to the full staff of the hospital in 1870 and served in that capacity for 27 years, until in 1906 he was made consulting surgeon.

In 1893 he commenced his first official connexion with the Royal College of Surgeons of England when he was elected on the Council, where for 21 years he served, and in 1906 was elected President in succession to Sir John Tweedy. Before election to the chair he had been for six years chairman of the Court of Examiners, *where his intimate knowledge of anatomy* both academic and in its application to surgical procedure, had a great influence. In 1898 he delivered the Hunterian lectures at the College, taking as his subject the origin and progress of renal surgery, a province of surgery in which he had already made a special mark. He was the first to perform the definite operation of nephro-lithotomy; the case was operated on in 1880 after diagnosis by Dr. Sidney Coupland, and the historic specimen, with the contemporary report, can be seen in the dean's room at the hospital. In 1903 he delivered the Bradshaw lecture of the College, taking as his subject cancer and its origin, and in that lecture he summarised a vast experience upon operable and inoperable malignant disease—again a province in which, alike by powers of diagnosis and manual ability, he had made for himself a prominent position. In 1904 he was appointed by the College to be its representative on the General Medical Council. This position he held till 1917, and during no less than 12 years was the treasurer of the Council. At the proceedings of the Council he was a *frequent and* strong debater, especially on educational questions, and more than occasionally his devotion to the interests of his College brought him into conflict with those whose policy was more directed to obtaining supervisory powers for the General Medical Council. He was particularly opposed to the compulsory registration of students by the G.M.C. and to the movement for disassociating the teaching of anatomy from the regular routine of a hospital medical school, a view which led him to give £1000 to the Middlesex Hospital to inaugurate an endowment fund for the medical school.

Morris was an accomplished writer, most of his contributions either as books, as chapters in symposia, or as scattered papers being devoted to one of three subjects—systematic anatomy and its surgical relations, renal and hepatic surgery, and the surgical treatment *of cancer.* His well-known System of Anatomy *made* its first appearance in the 'eighties and has now gone through five editions. Originally a sound text-book of human anatomy, it has been brought up to date and revised by a staff of authors representative both of English and American schools, and has become a comprehensive text-book, embracing a wide field of workers both here and in the *United States.* The Anatomy of the Joints of Man was published in 1878, and was recognised at once as forming a valuable addition to English text-books. It was poorly illustrated and the text was in some places redundant, but the accuracy of the descriptions and the skill and patience devoted to the explanation of the specimens noticed or depicted commanded immediate attention; there may not have been much originality of observation, but the minuteness of detail made of the book a valuable work of reference. He wrote the article on Injuries and Diseases of the Abdomen in Timothy Holmes's System of Surgery. He produced a treatise on *Diseases and* Injuries of the Genito-urinary Organs of the Male, which was followed up by a work on Diseases of the Kidneys and Ureter in which the ground covered by the Hunterian lectures of the College of Surgeons was thoroughly extended. A second edition of the work *appeared in 1901. The prominent feature* of all Morris's writings in this province of surgery was his quick *insight into practical methods, which* is well exemplified by the prompt employment that he made in his renal and hepatic work of the discovery of X rays. He was a contributor to Allbutt and Rolleston's System of Medicine and to Playfair Gynæcology, while he wrote the articles on Ren disease and diseases of the genito-urinary org Ashhurst's Encyclopædia of Surgery. His contri to the medical journals were frequent, and ther be found in our columns such instructive essays Cavendish lecture, which he delivered in 18 official lectures at the College of Surgeons, the

Oration at the Medical Society of London delivered in 1905, and the Hunterian Oration of 1909.

On the conclusion of his office as President of the Royal College of Surgeons in 1909, Morris was created a Baronet, but cessation of office at the College was almost at once followed by his election to the position of President of the Royal Society of Medicine, a post which he held for two years. His interest in the subject of cancer, manifested in so much of his work and writing, took practical shape when the Imperial Cancer Research Fund was inaugurated in his house; of this body he was vice-president and treasurer.

When the late Sir Constantine Holman, who had been a most active treasurer of Epsom College for 19 years, resigned in 1906, the Governors unanimously selected to succeed him Morris, who had been a member of the Council since 1888. From the time of his appointment he worked for the College with untiring zeal and energy; perhaps only those who were associated with him on the Council were able to realise fully the extent of the time and labour which he devoted to the duties, but his communications to The Lancet gave evidence of his deep interest in the Foundation. Besides acting as treasurer for 18 years, he was chairman of the Works Committee for almost as long a period, and in this capacity inaugurated or supervised many improvements at the College. Amongst these may be mentioned the erection of the Markham Skerritt Laboratories, the provision of improved heating and hot-water systems, enlargement of the infirmary, the provision of new workshops, gymnasium, and music block.

Morris was a great surgeon, and his leading position in the profession was obtained by industry, learning, enthusiasm for progress, and self-reliance. He was a man with strong opinions which opposition did not modify easily, as appeared from his conduct of business in many public capacities, and his views, whether of situations or of men, when arrived at were sure to be persistent, his individual estimate being led to play sometimes too prominent a part. To his high offices he brought a dignified presence, and also a fine ideal of work, but he had not quite the success as an orator which he coveted, his speeches being often too long and too detailed to carry the audience with him. But though such small criticisms were common in regard to him, Morris commanded the real respect of the profession in a universal way as one who had added to our store of learning and accomplishment, one who was untiring in his efforts to advance the national health, and one who was devoted to the best interests of his calling.

## FREDERICK MOTT, K.B.E., M.D., F.R.C.P. LOND., LL.D. EDIN., F.R.S.,

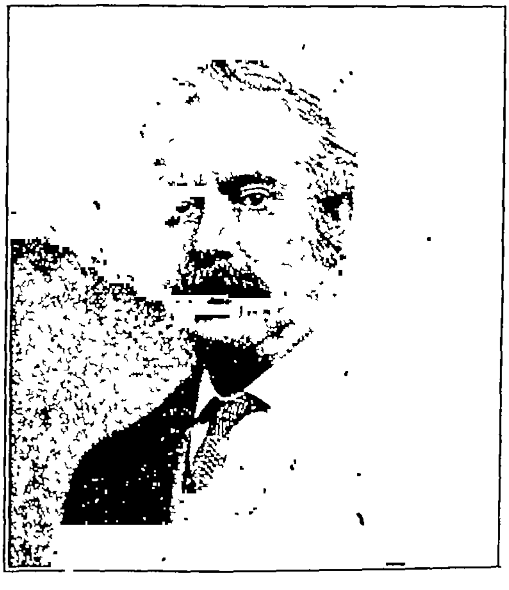
DIRECTOR, PATHOLOGICAL LABORATORY, MAUDSLEY HOSPITAL; CONSULTING PHYSICIAN TO CHARING CROSS HOSPITAL.

A brief estimate of the work of Sir Frederick Mott, which appeared in these columns last week, announced to the medical public the loss which has been sustained by his death.

Frederick Walker Mott was the son of Mr. Henry Mott, of Brighton, where he was born in 1853, and received his early education. He entered the medical school of University College, where he graduated as M.B. with first class honours in 1881, being University scholar and gold medallist in forensic medicine. After holding the usual appointments he went to Vienna, where he studied pathology and mixed largely with foreign post-graduate workers, thus laying the foundation of his international position. He proceeded to the M.D. in 1886, taking also the M.R.C.P., and in 1884 was appointed lecturer on anatomy and physiology at the Charing Cross Medical School —the two subjects were covered by one lecturer very frequently 40 years ago. This appointment he obtained on the direct suggestion of Burdon-Sanderson, who wrote disclaiming any knowledge of Mott save that derived from his work, certain portions of which had come before him and had much impressed him. In 1890 he was elected assistant physician to the hospital, with special charge of diseases of children, while he supervised also the electrical department. He became full physician three years later, and lectured in the school first on general pathology and then on neurology. For a time he was chairman of the school committee, and in all these important connexions with the school and hospital he has left behind him a memory for unceasing interest in the institution and in the welfare of the students, for devotion to work, and for great personal kindness.

Mott's labours and performances as a neurologist were so important and so far-reaching that a summary of them is not an easy task. The work of many men who have enriched our scientific knowledge may be often dealt with as a series of more or less independent contributions, the value of each being unrelated in the historical sense to its predecessor. To study the influence of Sir Frederick Mott on medical and scientific thought is in a very special sense to study historically the development of his life's work. The work of Mott, beginning with broad fundamental studies of the physiology of the nervous system, progresses in a logical order to the examination of the structure on which physiological activity depends, next to the pathological disorders of structure, later to the concomitant evidences of functional disorder attending it, and finally to considerations of the psychological implications of pathological disturbances in the nervous mechanisms.

Mott was first drawn to the study of the nervous system in the years succeeding the fundamental work of Hitzig, Munk, and Ferrier, at a time when there was still much to be done by broader and freer experimental methods than those that are possible in the present day. His work in conjunction with Schäfer on cerebral localisation added much to our knowledge of the motor functions of the cerebrum. Later followed much work on the sensory functions of the cortex and his well-known experiments with Sherrington on the apæsthetic limb. Other work followed dealing with the functional activities of the spinal cord. From these physiological experiments Mott turned his attention to the histology of the nervous system. He demonstrated the thalamic connexions of the fillet and did much to formulate the anatomy of the spinal encephalic systems.



[Elliott & Fry.

Sir Frederick Mott.

On his appointment as pathologist to the Central Laboratory of the London County Asylums, Mott began to interest himself more especially in the pathology of the nervous system in connexion with the psychoses. With characteristic directness he dealt first with the one form of insanity which in those days was recognised as undoubtedly associated with gross changes of the central nervous system Krafft-Ebbing had already proclaimed the syphilitic origin of general paralysis, but his views were only accepted by a minority of psychiatrists in this country, and, as Mott pointed out in his epoch making paper on the Ætiology of General Paralysis, the word syphilis did not even find a place in the index of Bevan Lewis's standard text book on psychiatry By the analyses of a vast amount of clinical and anatomical evidence, nearly all of which was collected and prepared in his laboratory, the syphilitic origin of general paralysis was once and for all irrefutably demonstrated in days before the Wassermann reaction had made the path of investigation comparatively easy Mott's great work on the relation of syphilis to insanity and tabes was published in the first volume of the *Archives of Neurology*, which he founded and continued to edit In the successive volumes of the *Archives* appeared numerous studies on the various aspects of the pathology of the nervous system in the psychoses, all tending to establish more and more firmly the correlation of structural change in the nervous system with disorders of conduct.

The responsibilities of his office led him at the same time to undertake investigations which had a far reaching influence on the treatment of the insane The hygienic condition of the mental hospitals was 30 years ago very far behind the standard which obtains to-day, and Mott threw himself whole heartedly into the work of reform He had in the early days to encounter great obstacles and to overcome much ill informed opposition, but it is from his inquiries into the bacteriology of hospital dysentery and tuberculosis, and by the reforms which he advocated, that an enormous reduction of the mortality from these diseases was achieved in the mental hospitals. His influence also made itself felt in countless reforms of the dietary and general hygiene of mental patients and throughout his whole career he was animated by a very intense sympathy and human interest in the insane

At the beginning of the present century Mott had already accomplished a vast amount of work on the investigation of the nervous system by physiological and anatomical methods, but he was quick to perceive their limitations and he became convinced that the future of pathology was to be to a great extent in the hands of the biochemist and physicist Although he recognised that these more specialised investigations required an entirely new orientation he attacked the problems with conspicuous courage The cerebrospinal fluid as the supposed nutrient medium of the central nervous system first engaged his attention, and though he later on abandoned many of the views that he advanced together with Halliburton on the source of choline, his Croonian lectures still remain a record of the first attempt to seek for products of nervous disintegration in the living body Later he followed up the same line of inquiry with microchemical methods.

The importance of the study of the autonomic nervous system and endocrine organs to psychiatry engrossed him later He perceived that the mechanisms of the affective states were likely to be of supreme importance in the understanding of disorders of conduct He proceeded to concentrate his attention on the pathological histology of the secretory structures and the vegetative nervous system His studies on the endocrine organs and the sympathetic system in dementia præcox are of fundamental importance It is in a great measure due to this work that whatever view we may take of the origin of the psychical symptomatology of dementia præcox it is possible to trace much of the disordered conduct to a definite and widely spread bodily change In the group of psychoses due to endocrine disorders and many of the types of manic-depressive insanity he was again able to point to a generalised bodily disturbance

Mott believed that the study of the pathological anatomy of dementia præcox afforded some evidence of its congenital origin, and in an attempt to further this view he devoted much attention to the study of heredity in the insane. From an analysis of the vast material that he collected from the London mental hospitals he formulated the "Law of Anticipation" in insane stock, according to which the psychotic factor appears earlier in each succeeding generation and thus unaided nature tends to eliminate the tainted progeny He pointed out that this factor was of greater importance in the elimination of hereditary psychoses than anything that could be achieved by segregation or sterilisation, since the period of greatest fertility precedes the development of those symptoms which would bring the individual under control

During the war Mott acted as consultant to a neurological clearing hospital, and for a time his attention was to some extent diverted from the study of the psychoses to that of the neuroses. He found that in the vast majority of cases of war-time neurosis there was a history of previous nervous instability, and he taught that the strain of war only became an effective cause of neurosis in those patients who already possessed a constitutionally neuropathic disposition In other words, he considered that just as his investigations of the psychoses had demonstrated pathological changes in the nervous and somatic mechanisms, so a similar disturbance should be demonstrable in the neurotic, and this disturbance he suspected to be in the mechanisms subserving the organic response to emotion. During this period he devoted much time and thought to the adjustment of organic pathology to the facts of pathological psychology He was frankly sceptical of the results claimed for the methods of psycho analysis, and in his psychological investigations he adopted a modified behaviouristic attitude He steadfastly declined to commit himself to any metaphysical theories of the relation of mind and body He had early revolted from the crude materialism of Victorian physiology, and beyond this point as a scientific worker he refused to go

No appreciation of the influence of Mott on medical science would be complete without some reference to the part that he took in the foundation of the Maudsley Hospital. He regarded the formation of a school for the teaching of psychiatry and the furtherance of research work as one of the great achievements of his life. To this end he induced the London County Council to establish well-equipped clinical laboratories at each of the mental hospitals which are conducted in close connexion with, and to some extent under the supervision of, the Central Laboratory at the Maudsley Hospital It is mainly due to his efforts that a Diploma in Psychological Medicine has been established by the London colleges and many of the universities, and he acted as honorary director of the courses held for this degree at the Maudsley Hospital, where to the last he lectured on pathology and pursued his research work in the laboratory

The great work accomplished by Mott for scientific psychiatry was not alone dependent on the value of his monumental researches His life was characterised by an innate modesty and simplicity of character which made him accessible to all those who wished to consult him, and there are few workers in the field of psychiatry who have not at some time personally benefited by his common sense and scientific acumen His kindliness endeared him to all, and those who had the privilege of working with him will remember him both as a great master and a great friend

His publications were numerous and a very large proportion of them have appeared in these columns, where will be found the Croonian lectures delivered before the Royal College of Physicians of Lond the subject being the degeneration of the neurone, the Lettsomian lectures delivered before the Medical Society of London on the effects of high explosives upon the central nervous system, and many contributions upon various neurological conditions. He wrote on these in the Encyclopædia Britannica, and contributed frequently to the *Transactions* of the Royal Society and to *Brain*, which he edited, as well as contributing largely to the *Archives of Neurology and Psychiatry*, which he founded. The material for all this work was obtained from his hospital wards and from his opportunities as pathologist to the London County Asylums, so that all his written work was informed throughout by his personal experience. Elected F.R.S. in 1896, he was also Fothergill Gold Medallist, Moxon Gold Medallist of the Royal College of Physicians, and a Fellow of University College, London, and had been Fullerian Professor of the Royal Institute. He was created K.B.E. in 1919, held a Roumanian Order, and was a corresponding member of many foreign societies.

In private life his widely acknowledged distinction made no difference to his unassuming manner. He was a kindly friend and a generous host, a quietly amusing talker, and devoted to music. He married in 1885, Georgiana, daughter of the late Mr. G. T. Soley, by whom he had four daughters, to whom we extend all sympathy. A largely attended memorial service was held at St. Martin's Church on Wednesday last.

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## ARTHUR CONYERS INMAN, M.B., B.CH. OXF.

THE medical profession has suffered a severe loss by the untimely death of Dr. A. C. Inman, for he was a pathologist who touched the practice of clinical medicine at many points.

Arthur Conyers Inman was born in Kensington in 1879, the son of the Rev. H. T. Inman. He was educated at Haileybury and St. Edward's School and Wadham College, Oxford, taking his degree in natural science in 1900, then going on to St. Thomas's Hospital, London, for the clinical part of his training. After qualifying in 1904 and holding resident appointments at St. Thomas's and the Brompton Consumption Hospitals he became interested in pathology and worked in Sir Almroth Wright's laboratory at St. Mary's, at the Pasteur Institute in Paris under Metchnikoff, and as voluntary assistant in the pathological department at Dresden; it was only after obtaining the broad view that comes from seeing methods and following other people's investigations on a large scale that he returned to London to become superintendent of the pathological laboratories at the Brompton Hospital. Here he became counsellor and friend to successive generations of house staff and resident officers, causing them to look into the pathological basis of their clinical work and receiving himself stimulus to successive investigations. His early association with Dr. M. S. Paterson was especially fruitful. Inman devoted much time to estimating the exact value in the diagnosis of tubercle of such helps as the opsonic index, complement fixation, the Arneth index, and the sedimentation test, but he always made it clear that the interpretation of these results rested with the clinician who could take into consideration all the factors in diagnosis. In all his work Inman gave the closest attention to detail, and it was characteristic of him that he would undertake nothing unless he could do it thoroughly. A few successful cases in the early stages of experiment never misled him to publish them as results. While, therefore, his contributions to medical literature may be comparatively few they are at least sound. His work, as that of any honest worker, often led him down a blind alley; he labelled these alleys so that no time need be wasted by others in traversing them. One of these blind alleys was an attempt to find a specific treatment against secondary infections in cases of advanced tuberculosis. Inman concluded from his work that there was no hope of a successful issue in this direction. It was Inman who did what no clinician had succeeded in doing; he suggested a simple clinical classification of pulmonary tuberculosis, and many practitioners have reason to bless him for the precision of the three groups: resting febrile, resting afebrile, and ambulant afebrile cases.

During the war Inman became honorary captain in the R.A.M.C., and was posted as specialist bacteriologist to various centres. At one or other of the research laboratories attached to the Expeditionary Force in France he was able to make a study of the biology of infected wounds and especially of the tryptic properties of pus which led to important deductions in the choice of antiseptics and the mechanism of wound drainage. Later on, at the Mont Dore Military Hospital at Bournemouth, he pointed out the high percentage of dysentery convalescents who were returning to this country carrying entamœba cysts and showed the need for careful protozoological examination of every case of dysentery coming under investigation. During this time he was engaged with Prof. G. Dreyer and others in a study of the agglutination curve in inoculated persons which resulted in a singularly valuable clue to the diagnosis of typhoid and paratyphoid fevers, the results being interesting for the high degree of mathematical accuracy. Much of this work was embodied in reports presented to the Medical Research Council.

DR. A. C. INMAN.

Something should be said of Inman's powers of organisation, a quality much valued by those who worked with him. His orderly mind would make a success of any meeting, no doubt because he was in the habit of giving the same thought and attention to detail in the arrangement of a conference as he did to making up a dinner party—and he was a charming host. He was a good linguist and always followed the foreign literature on the subjects he was studying, but not to the exclusion of the work done at home with which he was fully acquainted. Hence he was an ideal colleague in literary work, and the text-book on pulmonary consumption published in collaboration with the late Dr. A. C. Latham owed much to Inman's careful preparation which formed its groundwork.

Dr. Inman was twice married; in 1909 to Dorothy, only child of Dr. F. J. Wethered, and in 1919 to Mlle. Colette Frey of Paris. Travel came first among his recreations, but he was also a keen cricketer and a lover of good music. His death, which occurred in a nursing home at Rouen, was due to the disease which he spent his life in investigating, accelerated at the last by glycosuria.

## GERHARD HOTZ, M.D. BASLE AND WÜRZBURG,

### PROFESSOR OF SURGERY AND DIRECTOR OF THE SURGICAL CLINIC IN THE UNIVERSITY OF BASLE.

THE death of Prof. Hotz is a severe loss to surgical teaching and removes a figure loved and honoured far beyond his native city. Gerhard Hotz was born in Basle on June 8th, 1880, the son of Dr. Rudolf Hotz-Linder, teacher in the High School. He took the Federal qualification in 1905, became surgical assistant in the Bürgerspital under Prof. Enderlen, and followed his master to Würzburg in 1907, where he gained a thorough introduction to modern surgical method and began to acquire organising ability. After taking his degree in Würzburg in 1909 he received the title of professor in 1911 and shortly afterwards refused an invitation to Chicago in order to become surgeon in charge of the Deaconess House in Freiburg. It was while he was there that war broke out and Hotz received permission from the Swiss Army Medical Department to remain in Freiburg, where he took over a large part of the systematic teaching and became responsible for a war hospital which, with its adnexa, gave him at times 600 beds under his personal care. At this period he made intensive studies of gunshot nervous injuries with Dr. Hoche, director of the Nerve Clinic, and with an extensive private surgical practice lived an extraordinarily full life complicated by shortage of food and harassed by the activities of enemy aeroplanes which destroyed the Anatomical Institute close to his hospital.

PROF. HOTZ.

In 1918 Hotz returned to Basle to occupy the surgical chair left vacant by the departure of de Quervain for Berne. The position of a professor of surgery in a continental clinic is something different from what we know in this country. He is the absolute head of a surgical establishment which includes laboratories, X ray and electro-therapeutic equipment, and through his hands pass all the important and exceptional surgery of the district. It thus becomes easy for him to organise through his assistants clinical demonstrations on a grand scale and to place the teaching of surgery on a systematic basis. Less fortunate surgeons visiting his clinic found Hotz teaching elementary students by means of lecture-demonstrations in the course of which patients, museum specimens, skiagrams, and diagrams illustrating anatomy, physiology, and pathology were shown. The pressure of one button brought up a fresh blackboard or a new drawing, another excluded daylight in a few seconds, every possible dissection was ready to hand, and his voice was never drowned by the roar of traffic. His writings include useful work on abdominal emergencies and on blood transfusion, but his teaching for the most part has no record except in the careers of his assistants and pupils.

In physique Hotz was a slight, alert man of medium height with quiet incisive manner and unfailing sympathy both for patients and students. A visit paid to Basle three years ago by the heads of surgical units in this country gave him an opportunity for intimacy which was availed of then and since by both parties. One of the visiting surgeons writes of him as a man who exerted a good influence which could be seen and felt in all his surroundings. "Hotz was," he adds, "more than a surgeon, he was a philosopher." He played a prominent part in the life of his native city and would have served on municipal and federal councils had his strength permitted, but his work was carried on under the constant shadow of illness. Just after being appointed to the chair of surgery he had a gastric perforation which required immediate operation, and once again during his term of office he came under the surgeon's knife. On this account he forswore all enjoyments and engagements outside the work of the clinic and practised a rigid abstemiousness. His premature death at the age of 46 was due to the perforation for the third time of a gastric ulcer.

Prof. Hotz was happily married to Frl. Orsolina Fanconi, of Samaden, and surgeons in many lands join in sympathy with his widow and six children.

# Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council held on June 10th, Sir John Bland-Sutton, President, being in the chair, diplomas of Fellow were conferred upon 27 men and 2 women who were successful at the recent examination held from May 20th to June 2nd Of the 110 candidates who presented themselves, 34 were approved and 76 were rejected. Five candidates—G. F. G. Batchelor (Guy's), B. H. Boggon (St. Thomas's), G. F. Gibberd (Guy's), R. W. Jones (Liverpool), and John Lewin (Guy's)—are not yet of age to receive the diploma. The following are the names and medical schools of the candidates upon whom the diploma was conferred :—

Geraldine M. Barry, Royal Free; H. Barbash, Cambridge and St. Bart.'s; R. Brooke, Guy's; B. H. Burns, Cambridge and St. George's; D. A. Davies, St. Thomas's; J. L. Diggle, Melbourne and Guy's; H. C. Edwards, King's Coll.; K. H. Hadley, Melbourne and Guy's; L. M. Ingle, Cambridge and London; Erna Henrietta Jebens, St. Mary's; S. R. Joglekar, Univ. Coll. and Guy's; R. P. S. Kelman, Otago; G. King, London; F. Langford, Bristol and Guy's; F. Louis, Univ. Coll.; C. A Lupton, Cambridge and St. Thomas's; A. L. McGregor, Edinburgh; J. D. McLaggan, Aberdeen and St. Bart.'s; D. P. Marks, St. Thomas's; D. S. Middleton, Edinburgh; D. W. G. Murray, Toronto and London; F. C. Ormerod, Manchester and Westminster; G. G. Penman, St. Thomas's; F. W. M. Pratt, St. George's; J. N. Sankey, Birmingham; J. J. Savage, Oxford and St. Bart.'s; W. R. Spurrell, Guy's; H. J. Taggart, Belfast and London; and C. H. Thomas, St. Bart.'s.

The diploma of Member was conferred upon A. H. F. Cole, Durham University, and L. Dass, Punjab and Middlesex Hospital, who have now complied with the by-laws of the College.

The following gentlemen were elected examiners for the ensuing collegiate year:—

*Board of Examiners for the Fellowship.*—Anatomy: William Wright (London) Frederick G. Parsons (St. Thomas's), W. E. Le Gros Clark (St. Bart.'s), and Cecil P. G. Wakeley (King's Coll.). Physiology: David H. de Souza (King's Coll.), F. Roberts (Cambridge), J. B. Leathes (Sheffield), and Herbert E. Roaf (London Hosp.).

*Conjoint Board.*—Biology: T. W. Shore (St. Bart.'s) and James P. Hill (Univ. Coll.). Anatomy: Henry A. Harris (Univ. Coll.), Oscar E. Hillman (Middlesex), and John B. Hume (St. Bart.'s). Physiology: C. A. Lovatt Evans (St. Bart.'s) and G. A. Buckmaster (Bristol). Midwifery: Eardley Holland (London), Donald W. Roy (St. George's), H. Beckwith Whitehouse (Birmingham), and Clifford White (Univ. Coll.).

Sir Cuthbert Wallace and Prof. William Wright were appointed to conduct the examination in pathology which candidates will be required to pass under the revised regulations of the Conjoint Board.

UNIVERSITY OF LONDON.—The following students have passed in one of the two groups of subjects for the Third (M.B., B.S.) Examination for medical degrees :—

*Group I.*—Florence A. Adam, London Sch. of Med. for Women; Shriharsh Chintaman Bakhle, Guy's Hosp.; Kathleen Blake, King's Coll. Hosp.; James W. Bottoms, London Hosp.; Edith D. Bowie, King's Coll. Hosp.; Alison M. Clark, London Sch. of Med. for Women and St. Mary's Hosp.; Frederick J. T. Foenander, Middlesex Hosp.; Dora J. Fox, London Hosp.; Elsa C. A. Fristedt, London Sch. of Med. for Women; Bernard M. C. Gilsenan, St. Bart.'s Hosp.; Minnie Gosden, London Hosp.; Charles H. Hampshire, Univ. Coll. Hosp.; Catherine M. Hext, London Hosp.; David P. Holmes, Westminster Hosp.; Morfydd R. Jones, London Sch. of Med. for Women; Michael C. Lavin, London Hosp.; Solomon Levy, Middlesex Hosp.; Norman W. MacKeith, Guy's Hosp.; Evelyn T. D. Maclagen, St. Mary's Hosp.; Evelyn M. Pakeman, Londn Sch. of Med. for Women; William E. Parry, London Hosp.; George E. G. Peirce, St. Mary's Hosp.; Agnes N. Ramsbotham, London Sch. of Med. for Women; Jacobus W. Schabort, Guy's Hosp.; Eustace F. Stead, London Hosp.; Edith A. Straker, London Sch. of Med. for Women; Sylvia Sworn, Univ. Coll. Hosp.; Frederick W. Ta'Bois, London Hosp.; Edith M. Webb, London Sch. of Med. for Women; and Herbert F. Wilson, London Hosp.

*Group II.*—James R. Beagley and Wynn R. W. Bonner-Morgan, St. Bart.'s Hosp.; Rose A. Carter and Evangeline A. Clark, London Sch. of Med. for Women; Arthur C. Counsell, Middlesex Hosp.; Brian R. Crossley, Univ. Coll. Hosp.; Muriel Davies, Westminster Hosp.; John C. G. Dickinson, Guy's Hosp.; John D. Durance, St. Mary's Hosp.; Donald C. Fairbairn, Oswald F. Farndon, and Maurice Fishman, St. Bart.'s Hosp.; Stanley C. Gawne, University of Liverpool; Sydney A. Grant, London Hosp.; James I. Griffiths, Univ. Coll. Hosp.; Frederick D. M. Hocking, Middlesex Hosp.; Douglas S. Huskisson and Frederick H. K. Knight, Guy's Hosp.; Elsie Lyon and Margaret B. MacDonald, Charing Cross Hosp.; Lewis J. McGregor, St. Thomas's Hosp.; Ian McPherson, Middlesex Hosp.; Mary A. Marshall, St. Mary's Hosp.; George A. Martin, Guy's Hosp.; Grace E. Mizen, Charing Cross Hosp.; George A. H. Norman, Westminster Hosp.; Bethan Phillips, Univ. Coll. Hosp.; Howel J. Powell, St. Mary's Hosp.; Muriel A. Pugh, Charing Cross Hosp.; James E. C. Rouse, St. George's Hosp.; Douglas J. L. Routh, Univ. Coll. Hosp.; Lewis H. Savin, King's Coll. Hosp.; Sidney T. Seccombe, St. Thomas's Hosp.; William D. Sheldrake, Guy's Hosp.; Mary Stirk, University of Manchester; Stephen V. Strong, Guy's Hosp.; Oxburgh G. Tippett, St. Thomas's Hosp.; John R. Tree, Middlesex Hosp.; and Elizabeth M. Whishaw and James T. Wybourn, St. Mary's Hosp.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful :—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

*Part II., with Second-class Honours.*—Stanley P. Taylor (distinction in Pathology).

*Pass.*—Richard E. Satchwell.

*Pass (completing Examination).*—John F. O. Bodman, Muriel E. Drew, Frank J. Farr, Mildred B. Harvey, and Arthur A. B. Vincent.

*In Group I. (completing Examination).*—Cecily France-Hayhurst.

*In Group I. only.*—Ernest May and Ernest S. Rogers.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held on June 26th, at 3.30 P.M., at the Queen's Hospital, Sidcup. A demonstration of the ultra-violet ray department of this hospital, followed by lantern demonstration of radiograms, has been arranged.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On June 24th, at 2.30 P.M., Mr. H. Tyrrell Gray will give a special clinical demonstration in surgery at the Great Ormond-street Hospital, and on the 25th Mr. Goulden at the Royal London Ophthalmic Hospital will give a clinical demonstration in ophthalmology at 12.45 P.M. Both demonstrations are open to the medical profession without fee. The following courses will be held during July: At the N.E. London Post-Graduate College (Prince of Wales's General Hospital), Tottenham, a course in medicine, surgery, and the specialties, lasting from July 19th to 31st and occupying all day. From July 5th to the 17th the National Hospital for Diseases of the Heart will give an all-day course in cardiology, and between the same dates there will be a course in dermatology at the Hospital for Diseases of the Skin, Blackfriars, taking place each afternoon. The West End Hospital for Diseases of the Skin will begin a month's course on July 19th, consisting of lectures and clinical demonstrations upon selected cases each afternoon at 5 P.M., and finishing on August 14th. From July 12th to the 24th the Royal Eye Hospital will give a series of demonstrations on the treatment of diseases of the eye, taking place every afternoon at 3 P.M. Copies of all syllabuses, of the General Course Programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship of Medicine, at 1, Wimpole-street, London, W. 1.

KING'S COLLEGE HOSPITAL.—It is announced that the reduced expenditure of 1925 will allow of the re-opening of one of the closed wards.

RESEARCH DEFENCE SOCIETY.—The annual general meeting will be held at the House of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Friday, June 25th, at 8 o'clock, when the chair will be taken by Lord Lamington, and Dr. J. A. Murray will give an address on the Experimental Attack on Cancer.

WELSH NATIONAL SCHOOL OF MEDICINE.—Mr. A. W. Sheen, professor of surgery, has been appointed dean of the faculty of medicine on the retirement of Prof. T. Graham Brown from this office. Sir Ewen Maclean, professor of obstetrics and gynæcology, has been elected President of the British Medical Association for 1928, when the annual meeting will be held at Cardiff.

MEDICAL GOLFING SOCIETY.—The 29th annual summer meeting was held at Wentworth on June 10th. The scratch results were as follows: THE LANCET Challenge Cup, H. D. Gillies. Milsom Rees Challenge Cup, A. H. Gosse and F. A. Juler. Handicap results were: Class I., A. S. Gordon and A Galletly tied at 1 down. Class II., C. Scott Gillett and F. A. Juler tied at 2 down. Foursomes were won by T. P. Kolesar and W. R. Bristow.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—Prof. Hugh Cabot, professor of surgery in the University of Michigan, who has been taking charge for a fortnight of the teaching of surgery in Sir Holburt Waring's Clinic, was admitted on June 9th as an honorary perpetual student of St. Bartholomew's Medical College, an honour conferred only once before, when Prof. Harvey Cushing had charge of the teaching of surgery in Prof. Gask's Clinic in 1922.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: MATERNITY AND CHILD WELFARE GROUP.—The annual meeting will be held on July 6th at the Caxton Hall, Westminster, at 5.30 P.M. Mr. George Waugh will introduce a discussion on tonsils and adenoids in a paper on the Growing Significance of Diseased Tonsils and Adenoids: an Historical Survey, and will be followed by Dr. R. C. Clarke who will discuss the Ætiology of Enlarged Tonsils and Adenoids and the Causes of Failure of Operation. Dr. Harold Waller will then speak on the Early Symptoms and Signs of Ill-health Associated with Diseased Tonsils and Adenoids.

A dinner open to all medical practitioners attending this meeting will be held at the Florence Restaurant, 56, Rupert-street, London, W., at 7.30 P.M., on the same day (tickets 4*s.* each). Those who wish to attend this dinner are requested to communicate before June 30th with the hon. secretary, Dr. Margaret Emslie, at 1, Upper Montague-street, Russell-square, London, W.C. 1.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty held on June 7th the following were admitted as Honorary Fellows of Faculty :—Sir Hector Clare Cameron, C.B.E., M.D., LL.D., and George Stevenson Middleton, M.A., M.D., LL.D. The following were admitted after examination as Fellows of Faculty :—Jethalal Mansingbhai Damany, M.B., B.S., Bombay; Geoffrey Balmanno Fleming, M.B.E., M.D., B.A., Glasgow; Thomas Jackson, L.R.C.P. Edin., L.D.S., Cheltenham; Robert Aim Lennie, M.B., Ch.B., Glasgow; John King Rennie, M.C., B.Sc., M.B., Ch.B., Glasgow; Charles Rudd, M.B., Ch.B., D.O.M.S., Birmingham; William Smith Syme, Junr., M.B., Ch.B., Glasgow; James Nisbet Tennent, B.Sc., M.B., Ch.B., D.O.M.S., Glasgow.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—At a meeting of the College held on June 8th the following motion came up for determination :—

That William Lloyd, a Licentiate of the College, registered as of 58, Brook-street, Grosvenor-square, London, W. 1, having acted in an unbecoming and unprofessional manner, in respect that he, being a registered medical practitioner: (*a*) Sought to obtain patients and to promote his own professional advantage by means of an article published in the *Daily Mail* of June 5th, 1925, entitled: "Hay Fever—New Treatment—Specialist's Report—Patients Cured"; which was based upon materials supplied by him; and (*b*) sought to obtain as patients certain persons who, after reading the article, had written to the *Daily Mail* for his address, and whose letters were forwarded to him by the *Daily Mail*, and to whom he wrote inviting appointments to be made for treatment, although they had not themselves communicated with him—be censured.

The motion was carried.

The College voted a donation of 100 guineas to the Scottish National Memorial to Queen Alexandra. The College voted a sum of 100 guineas to the Extension Fund of the Incorporated Edinburgh Dental Hospital and School.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

ON Monday, June 14th, the Reading University Bill was read a second time.

### *Vaccination Bill.*

On Tuesday, June 15th, Mr. GROVES presented a Bill to amend the law relating to compulsory vaccination, which was read a first time.

## HOUSE OF LORDS.

### TUESDAY, JUNE 15TH.

### MIDWIVES AND MATERNITY HOMES BILL.

The Midwives and Maternity Homes Bill was considered on Report.

Part 1 of the Bill amends the Midwives Acts, 1902 and 1918. Clause 1 provides that if any person, being either a male person or a woman not certified under the Bill, attends a woman in childbirth otherwise than under the direction and personal supervision of a duly qualified medical practitioner, that person shall, unless he or she satisfies the court that the attention was given in a case of sudden or urgent necessity, be liable on summary conviction to a fine not exceeding £10.

During the Committee stage of the Bill in the House of Lords the clause was amended by the addition of the following proviso: "Provided that the provisions of this subsection shall not apply in the case of a person who, while undergoing training with a view to becoming a duly qualified medical practitioner or a certified midwife, attends a woman in childbirth as part of a course in practical instruction in midwifery."

The Marquess of SALISBURY, Lord Privy Seal, now moved to amend this proviso, so as to make it read, "a course in practical instruction in midwifery recognised by the General Medical Council or by the Central Midwives Board." He said that during the discussion of the amendment in Committee, Lord Knutsford expressed the view that the exemption for medical students and pupil midwives was not sufficiently safeguarded. On his suggestion, the Government now proposed that the exemption should only apply to students who were in training with a view to becoming duly qualified medical practitioners or pupil midwives, anxious to become certified midwives, if the course of practical instruction at which they were working was recognised by the General Medical Council or the Central Midwives Board.

The amendment was agreed to.

Clause 11 of Part 3, which is the interpretation clause, provides that a local supervising authority may grant exemption from the operation of Part 2 of the Act, which provides for the registration of maternity homes, of any hospital or other premises for the conduct of which a duly qualified medical practitioner resident therein is responsible, or any hospital or institution not carried on for profit, and not mainly used as a maternity home. It also provides that any person aggrieved by the refusal of a local supervising authority to grant exemption under Part 2 in respect of any hospital, premises, or institution, or by the withdrawal of any such exemption previously granted by the authority, may appeal against the refusal or withdrawal to the Minister of Health, who, after considering the matter, shall give such directions as he thinks proper and the authority shall comply with any directions so given.

Lord MUIR MACKENZIE moved to transfer these provisions from Part 3 to Part 2 of the Bill. He explained that his amendment did not touch the substance of the measure. He had been in communication with the Ministry of Health, who thought that the provisions referred to ought to be transferred to Part 2.

The Marquess of SALISBURY accepted the amendment, which was agreed to.

The Report stage of the Bill was concluded.

## HOUSE OF COMMONS.

### TUESDAY, JUNE 8TH.

### PROTECTIVE DUTIES ON SCIENTIFIC INSTRUMENTS.

The House went into Committee on the Finance Bill, Captain FITZROY, Deputy Chairman of Committees, in the chair.

On Clause 10 (Continuation and Amendment of Part I. of Safeguarding of Industries Act, 1921), which deals with the safeguarding of key industries,

Sir R. THOMAS moved to leave out Subsection (1), which renews the duties under Part I. of the Safeguarding of Industries Act, 1921, for a further period of ten years from August 19th, 1926. He said that he had always opposed the principle of safeguarding key industries and he was as convinced to-day as he was when the Bill was first introduced that it was a pernicious one and had raised prices. It was unfair that the present Government should attempt to bind future Governments for such a long period as ten years.

Mr. DALTON said that this clause in the Finance Bill was a relic of war psychology and of conditions which had now very largely passed away. Even in 1921 it was thought that five years would be quite sufficient to enable these industries which were considered to be necessary on military grounds to establish themselves. In view of all that they had heard in recent months about the stabilisation of the European position as a result of the Locarno conversations, which it was hoped would soon be embodied in a fixed treaty, he submitted that the grounds on which Part I. of the Safeguarding of Industries Act was put forward were now completely inapplicable, and these provisions ought not to be re-enacted. It was not only proposed in this clause to continue the duties that had been in operation since 1921, but also gradually to extend the range of the articles subject to duty, and also, perhaps, to increase the rates of duty. Six thousand articles were dutiable under the provisions of the 1921 Act, and now that number was to be greatly increased, particularly under a provision which was bringing in all separate components and elements of the dutiable articles. In addition the duty was to be raised from 33⅓ per cent. to 50 per cent. on the greater part of the articles. There must be something very seriously wrong with a number of these industries if, in spite of five years artificial feeding by a subsidy from the consumers in this country, they were still unable to compete with their rivals on the continent of Europe, who had been going through a period of very much greater difficulty than the manufacturers of this country. He noticed—and he thought that it was significant—that in two or three places in the Report of the Board of Trade Committee reference was made to the inadequacy of the arrangements for research in the British industries concerned. With regard to optical instruments, laboratory porcelain, and standard electrical instruments, the Committee admitted that British manufacture was very much behind hand in research and the coördination of research and manufacture. The policy of 1921 has evidently failed to produce the results required.

Sir P. CUNLIFFE-LISTER (President of the Board of Trade) said that every single section of the House had at one time or another been committed to this policy, and rightly so, because every one of these industries was an essential one, not only in war, but also in peace. On a matter of scientific efficiency the view pronounced by men like Sir Richard Glazebrook, Director of the National Physical Laboratory, and Sir William Pope, who he thought by common consent was the greatest living chemist to-day, would carry great weight. He would like to express the gratitude of the Government to Sir Arthur Colefox, and the two great scientists he had mentioned, for a very exhaustive and valuable inquiry. But of course this did not come only as the considered opinion of the Committee, but also as that of the three fighting Services as to what was absolutely vital to them as well as to the peace-time industry of this country. So far from there being inefficiency the record of these industries showed improvement in quality, in research, and also steadily falling prices. Our pre-war production of fine chemicals was about 10 per cent. of our consumption; to-day we were producing something like 75 per cent. There was an extraordinary advance not only in quantity, but also in quality, and an export trade was beginning as well. Take insulin, a vitally important drug. In insulin, which they had entirely developed under the protection of these duties, this country had now a very large share not only of the home market, but of the world market as well. The quality was quite excellent. He took it that was why the foreigner was buying it. The development of this fine chemical industry had made an opening for our scientific men and chemists, and there were now three or four times as many skilled chemists employed as ever before. Prices were falling all the time, and the fall was most marked wherever there was competition with a foreign monopoly. Optical glass and optical instruments were absolutely vital to all the three Services. They were equally important to medical and scientific research. When Dr. Gye and Mr. Barnard, whose researches were so well known, were making researches into cancer and required a particular kind of microscope in their experiments, which had never been made and which had to be specially designed, it was a British firm of optical instrument makers who at a very early date were able to produce what was wanted. Originally they were only interested in optical instruments for the purposes of war, and, of course, for medical research. The use of optical instruments for the testing of a number of products in industry was steadily growing. Everyone knew the value of X rays in detecting any faults in the human body. The X rays to-day was being used to detect hidden faults in the inside of almost every kind of article used in industry. If they took the chemical industry and the glass industry, it was common knowledge that in the great producing countries of the continent and the United States the capacity for production was greater than the output at present, and it would be perfectly simple if the Government withdrew the protection from these essential industries for foreign firms to produce on a larger scale which would suit them very well and to dump the surplus of their products in this country. They would be criminal if they did not continue for a reasonable period the full security and protection which had been so successful, not only in the case of these industries, but of other industries which depended upon them.

The amendment was rejected by 282 votes to 152.

An amendment proposed by Mr. GILLETT to limit the period of safeguarding to two years was negatived by 286 votes to 153.

Mr. PETHICK-LAWRENCE moved to leave out Subsection (2) of Clause 10, which raises the duties on optical glass and other goods to 50 per cent. of the value from May 1st, 1926. He said that glass was used for medical purposes, for research in hospitals in time of peace. The people who used that glass for these purposes wanted to secure it at a reasonably cheap price and if they were going to put an embargo, or at any rate a tariff, on the importation of efficient glass at a reasonable price from abroad, they were not benefiting as was suggested these users, but were injuring and to a certain extent crippling them on what they wanted to do. For hospitals and medical research efficient optical instruments were needed, and in order that the optical instrument industry might reduce its overhead charges and flourish they needed to get cheap materials. No one could pretend that if they put a tariff of 50 per cent. on the import of foreign glass they were going to enable these industries to get that glass more cheaply.

Sir P. CUNLIFFE-LISTER said that the more they produced the cheaper the product would be. The prices of these articles, which it was very difficult to produce cheaply, were only from 20 to 40 per cent. above pre-war prices, which, on the whole, was lower than the average rise in the price of other articles.

The amendment was negatived by 243 votes to 130.

Mr. PETHICK-LAWRENCE moved the omission of Subsection (3) of the clause, which adds to the Schedule of the Act the component parts of such optical instruments and scientific instruments as are chargeable with duty—amorphous carbon electrodes (but not including primary battery carbons or arc lamp carbons) and certain chemicals—and increases the duty on component parts of optical instruments from one-third to one-half of the value of the goods.

Mr. J. HUDSON, in supporting the amendment, said that it was not likely, even with very considerable scientific development, including the development of medical research, that in years to come there could be any return to the inordinate demand for the instruments dealt with in this section which was produced by the late war. In these circumstances one might ask what the Government expected to accomplish by putting on a duty of this sort.

Sir BURTON CHADWICK said a supply of optical glass and instruments of the first quality was essential to the prosecution of research in many very important branches of science. If there had been a serious fall in the optical industry it could be attributed largely to the immense accumulation of war surpluses of optical instruments which had not yet been used up in every belligerent country. That had produced an immense world reduction in the output of optical instruments and glass, and so the development of our optical production had generally been on a lessening scale in the years during which the 1921 Act had been in operation, but from their examination of the subject they found that the duty imposed had been of such value to the trade that it had actually saved it, in the opinion of the Board of Trade, from extinction. They believed that the duty which they were trying to impose would stimulate and develop the industry and help the British manufacturer to hold his own in competition with other countries. He believed that the industry was on the verge of a very much more prosperous condition. Safeguarding had not increased the price of one single item.

The amendment was negatived by 240 votes to 128.

Clause 10 was added to the Bill by 233 votes to 111 and progress was reported.

### WEDNESDAY, JUNE 9TH.

### *Septicæmia following Childbirth.*

Mr. PETHICK-LAWRENCE asked the Minister of Health whether his attention had been directed to the death of Mrs. Lily Maxwell from septicæmia following childbirth and to the comments of the Kingston coroner relating thereto, and whether he proposed to hold an inquiry into the case.—Sir KINGSLEY WOOD (Parliamentary Secretary of the Ministry of Health) replied: My right hon. friend's attention has already been called to this case and an inquiry is now being made by one of the medical officers of his department.

### *Open Spaces and Recreation Grounds in London.*

Sir HARRY BRITTAIN asked the Minister of Health if he would inform the House what efforts were being made by his department to secure open spaces and recreation grounds for the inhabitants of Greater London and for the districts immediately adjoining this area.—Sir KINGSLEY WOOD replied: The initiative in this matter rests with the local authorities. In so far as loans for the acquisition of land are subject to the consent of his department, my right hon. friend is willing to consider applications sympathetically, but loans may be delayed in some cases by heavy rates and the present need for economy. I may add that my right hon. friend has made a practice of urging local authorities to reserve land for open spaces in their town-planning schemes.

### THURSDAY, JUNE 10TH.

### *Medical Officers of Pensions Ministry.*

Mr. ROBERT YOUNG asked the Minister of Pensions how many medical men were now employed by his department throughout the country as medical referees or in any other capacity; what fees were paid; what was the total cost per annum; and whether the appointments were whole or part time.—Major G. C. TRYON replied: There are 338 medical officers now in the regular employment of the Ministry, of whom 252 are employed in a full-time and 86 in a part-time capacity. Of the full-time officers 50 are Permanent Civil Servants and the remainder are serving under contracts of temporary service varying from one month to three years. The total cost of these officers for the financial year ended March 31st, 1926, was £201,185, and the estimated cost for the current financial year is £222,240. In addition to the medical staff in regular employment it is still necessary to have frequent recourse to the assistance of private medical practitioners who act as examining medical officers (formerly described as medical referees), members of medical boards, supervisors of clinics, visiting surgeons, anæsthetists, &c., and are paid fees varying from £5 5s. to 5s., according to the nature of the services rendered. The total number now employed is 1752, and the fees paid during the financial year ended March 31st last amounted to £230,110.

### *Crown Nominees on the G.M.C.*

Viscount SANDON asked the Vice-Chamberlain of the Household, as representing the Lord President of the Council, on what dates the appointments of the Crown nominees to the General Medical Council lapse; and whether he could undertake that they would then be filled by non-professional persons.—Major HENNESSY replied: The dates of expiry of the terms of office of the Crown nominees (other than that of Mr. Hilton Young recently appointed) on the General Medical Council are as follows: Sir Edward Coey Bigger, Jan. 23rd, 1927; Sir Nestor Tirard, March 2nd, 1927; Sir William Leslie Mackenzie, Oct. 27th, 1927; and Sir George Newman, Oct. 8th, 1929. It is not possible to say in advance what action the Lord President of the day may see fit to take when the occasion arises for filling these vacancies.

### *Maternity and Child Welfare in Welsh Mining Areas.*

Mr. BARKER asked the Minister of Health if he was aware that the Welsh Board of Health were advising that no relief under the maternity and child welfare scheme be given to relieve distress arising out of the dispute in the mining industry but that such relief be given by the guardians of the poor, and that the Newport (Monmouthshire) Poor law union protested against this additional burden being placed on the funds of this union without any additional grant-in-aid; and would he consider cancelling this policy.—Mr. NEVILLE CHAMBERLAIN replied: It is no part of the maternity and child welfare scheme to relieve distress. Milk can only be supplied under that scheme to mothers and young children who are certified to need such a supply on medical grounds. The policy which has been adopted in this matter by the Welsh Board of Health on my instruction is as follows: While there should be no discrimination against the wives or children of men involved in the present dispute, no additional expenditure beyond that already approved for the supply of milk during the current financial year can be recognised for the Exchequer grant-in-aid. If, therefore, a maternity and child welfare authority spend more money on milk because of the dispute, the additional expenditure must be found out of the rates, but the better course would be that the distress arising out of the dispute should be dealt with by the guardians. I see no reason to modify or cancel this policy.

### FRIDAY, JUNE 11TH.

### *The Sale of Certified Milk.*

Mr. DUCKWORTH asked the Minister of Health whether, in connexion with the sale of Certified milk, he would consider the desirability of authorising the use of tin caps instead of paper caps and seals, in view of the cost of the latter method, which debarred many producers from applying for the Ministry's licence.—Mr. NEVILLE CHAMBERLAIN replied: There is no objection to the use of suitable metal caps for the sealing of bottles containing Certified milk and a number of producers are at present using such caps. Officers of the department are prepared to advise as to the suitability of any particular cap.

### *Adulteration and Sale of Impure Foods.*

Colonel DAY asked the Minister of Health what further steps he proposed to take for the protection of the public against the adulteration and selling of impure foods.—Mr. NEVILLE CHAMBERLAIN replied: I propose shortly to make a Milk and Dairies Order which I hope will secure a further improvement in the condition of the milk-supply. As the hon. Member is aware, regulations restricting the use of preservatives in food have recently been made and will come into operation next year. I am not contemplating any immediate enlargement of the powers of the local authorities responsible for the administration of the existing law as to the sale of food and drugs.

## MONDAY, JUNE 14TH.

### *Special Women Factory Inspectors in India.*

Mr. THOMAS HENDERSON asked the Under Secretary of State for India whether the Government of India had received any representations from provincial legislative councils as to the need that was alleged to exist for the appointment of special women factory inspectors; and, if so, whether the Government proposed to take any steps to induce local governments to make such appointments.—Earl WINTERTON replied: The Government of India have directed the attention of the Provincial Governments to the recommendation of the International Labour Conference of October, 1923, favouring the appointment of women for certain classes of factory inspection work, and have expressed the hope that in the larger Provinces it will shortly prove possible to make an advance in this direction. No report has yet been received of the action, if any, which has been taken by Provincial Governments.

### *The Indian Medical Service.*

Sir RICHARD LUCE asked the Under Secretary of State for India whether any decision had yet been reached as to the future of the Indian Medical Service; and, if so, if he could give any details as to that decision.—Earl WINTERTON replied: My noble friend hopes to receive the Government of India's final proposals very shortly.

### *Appointments as Factory Surgeons.*

Mr. HORE-BELISHA asked the Minister of Health what was the present procedure in the appointment of certifying factory surgeons by the Home Office; and whether he was satisfied that this procedure was the best calculated to obtain a proficient and efficient medical service.—Sir W. JOYNSON-HICKS replied: The appointments in question are made by the Chief Inspector of Factories under Section 122 of the Factory and Workshop Act, 1901. Vacancies as they occur are advertised in the *London Gazette* and communicated to the medical press, and applicants are required to give particulars of their qualifications and experience and of any other appointments they may hold. The applications are carefully scrutinised and inquiries made, and, in the case of important districts arrangements are made for the candidates to be interviewed by one of the medical inspectors. Where there is more than one candidate, the advice of the Senior Medical Inspector is taken. The Chief Inspector is satisfied that under this procedure the best men available are secured, and I have received no complaints.

### *Maternity Centres and Birth Control.*

Mr. THURTLE asked the Minister of Health if, in view of recent events, his department had reconsidered the question of permitting the giving of birth control information at maternity and child welfare centres.—Sir KINGSLEY WOOD replied: No, Sir.

### *Indian Army Veterinary Corps.*

Mr. LANSBURY asked the Under Secretary of State for India whether Indian candidates for commissions in the Indian Army Veterinary Corps must pass through the Dehra Dun Military College; and whether the capacity of this college was equal to the demands made by Indian candidates for commissions.—Earl WINTERTON replied: I have no doubt that the Government of India will be willing to consider candidates who have not passed through the Dehra Dun College provided that they are members of the Royal College of Veterinary Surgeons and are fully qualified in other respects. It is within the capacity of the Dehra Dun College to produce candidates for the small number of ents which it is desired to fill from this source in addition to its primary function of producing candidates for the Indian vacancies at Sandhurst.

### *Animals and Poison Gas Experiments.*

Captain WEDGWOOD BENN asked the Secretary of State for War whether he could explain why no less than 2131 animals, as disclosed by the War Department, were subjected to gas poisoning experiments in this country between May, 1923, and January, 1926; and whether, in view of the Washington Conference Treaty, 1922, and the Geneva Protocol, 1925, against the use of poison gas in warfare which had been ratified by 31 States, it was necessary to continue these experiments.—Sir L. WORTHINGTON-EVANS replied: Experiments with animals are, unfortunately, essential in order to obtain the necessary data for ensuring adequate defence against poison gas and for evolving efficient methods of treating gas casualties. As regards the second part of the question the Government does not feel that the Agreements referred to justify it omitting to take all possible precautionary measures to protect the Forces of the Crown and the inhabitants of the country against gas attacks in war and for this reason the experments referred to must continue.

## TUESDAY, JUNE 15TH.

### *Recruiting of Service Medical Officers.*

Lieut.-Colonel FREMANTLE asked the Prime Minister if the Government had arrived at any decision as to the recruiting of medical officers for the Navy, Army, and Air Force.—Mr. BALDWIN replied: Yes, Sir. The Government have considered the Report of the Committee appointed last autumn to consider questions relating to pay and other matters affecting recruitment of officers and nurses to the medical branches of the fighting Services and have decided to give effect to its recommendations as from July 1st next. —Lieut.-Commander KENWORTHY: Are the Government contemplating amalgamation of the three medical services? Mr. BALDWIN: No, not that I am aware of.—Lieut.-Colonel FREMANTLE: When shall we get details of this decision?—Mr. BALDWIN: The necessary orders, I understand, are to be published forthwith.

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BOLINGBROKE HOSPITAL, WANDSWORTH COMMON. The report for 1925, which has just been issued, states that in addition to the William Shepherd Memorial Wing, which is approaching completion, it is proposed so to reconstruct the out-patients' department that the ear, nose and throat, and eye departments may be modernised, to provide a second theatre and a pathological laboratory. The governors state that these additions have become of vital importance, the total number of patients having surpassed all previous records.

PRESENTATION TO PROF. SAHLI.—On May 27th Dr. Hermann Sahli, Professor of Medicine in Berne, celebrated his seventieth birthday, and was presented with a festive publication containing 57 original papers from pupils of his clinic. Dr. Sahli was only 32 years old when the Bernese Government nominated him to fill the chair of clinical medicine, and for nearly 40 years has been the centre of the scientific teaching of clinical medicine in Switzerland, while his standard work on clinical examination methods has made his name known all over the world. He is the survivor of the trio which included Kocher and Langhans, and drew numberless foreign students to the Berne school.

SOCIETY OF CHEMICAL INDUSTRY.—The forty-fifth annual meeting and Congress of Chemists will be held in London from July 19th to 23rd, under the presidency of Mr. W. J. Uglow Woolcock. A full programme has been arranged. The functions include the presentation of the Society's Messel Medal to Lord Balfour, F.R.S., on July 19th, at 2.30 P.M., after which the Messel Memorial Lecture will be delivered by Lord Balfour. At 11 A.M. on July 20th a joint meeting of the Biochemical Society with the London Section of the Society of Chemical Industry will be held at the Great Central Hotel, when the scientific and industrial problems presented by the hormones—the natural drugs of the body, will be discussed, Sir Alfred Mond presiding. Papers will be read by Dr. H. H. Dale, Sec.R.S., on the Experimental Study and Use of Hormones; Dr. H. W. Dudley on the Chemistry of the Pituitary Gland and of Insulin; Mr. F. H. Carr on the Commercial Production of Hormones; Dr. H. A. D. Jowett on the History of Adrenalin; Prof. G. Barger, F.R.S., on Recent Progress in the Chemistry of Thyroxine, and Dr. J. W. Trevan on Biological Assay of Hormones. Among the works and laboratories visited will be the National Physical Laboratory, Teddington; Burroughs, Wellcome and Co., chemical works, Dartford; British Drug Houses, City-road; Imperial College of Science and Technology, South Kensington; Chemical Laboratories, University College.

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning*

## SOCIETIES.

ROYAL SOCIETY, Burlington House, W
THURSDAY June 24th.—4.30 P.M., *Papers to be read* J C McLennan and A B McLay: On the Structure of the Arc Spectrum of Gold. J C McLennan and H G Smith *On the Series Spectra of Palladium.* A M Tyndall and L R. Phillips The Mobility of Ions in Air, Part III (Communicated by Prof A P Chattock.) L. C Jackson Investigations on Paramagnetism at Low Temperatures, Part II (Communicated by Sir William Bragg.) Sybil Cooper and *D Denny Brown Responses to Rhythmical Stimulation* of the Cerebral Cortex. (Communicated by Sir Charles Sherrington.) *Papers to be read in title only* Karl Pearson Researches on the Mode of Distribution of the Constants of Samples taken at Random from a *Bivariate Normal Population. Lord Rayleigh* Further Spectroscopic Studies on the Luminous Vapour Distilled from Metallic Arcs. Sir William Hardy A *Microscopic Study of the Freezing of Gel* Part I and Part II Sir William Hardy and Millicent Nottage Studies in Adhesion, I T Moran The Freezing of Gelatin Gels. (Communicated by Sir William Hardy.) W Jevons The More Refrangible Band System of Cyanogen as developed in Active Nitrogen (Communicated by Prof A Fowler) J A V Butler The Equilibrium of Heterogeneous Systems including Electrolytes, Part I (Communicated by Prof F G Donnan.) (The late) Mrs Hertha Ayrton Primary and Secondary Vortices in Oscillating Fluids, their Connexion with Skin Friction. (Communicated by Prof T Mather.) T T H Verschoyle Isotherms of Hydrogen, of Nitrogen and of Hydrogen Nitrogen *Mixtures at 0° and 20° C up to a Pressure of 200* Atmospheres (Communicated by Dr F A Freeth.) E. W Marchant and J. L. Miller The Loss of Energy in Metal Plates of Finite Thickness, due to Eddy Currents produced by Alternating Magnetic Fields. (Communicated by Sir Ernest Rutherford, P R S) W Sucksmith and H H Potter On the Specific Heat of *Ferro magnetic* Substances. (Communicated by Prof A P Chattock.) L. B Pfeil: The Effect of Occluded Hydrogen on the Tensile Strength of Iron. (Communicated by Prof H C. H Carpenter) T E. Allibone The Infra red Secondary Spectrum of Hydrogen. *(Communicated by Prof S R. Milner)* D C. Rose The Scattering of Alpha Particles through Small Angles. (Communicated by *Sir Ernest Rutherford*, P R.S.) V H Stott, D Turner, and H A Sloman Effects of Thermal Treatment on Glass as shown by *Precise Viscometry (Communicated by* Dr W Rosenhain) J E. Lennard Jones and Miss B M Dent The Forces between Atoms and Ions, II (Communicated by Prof S Chapman) J Topping and A E Ludlam Tables of log $K_0$ (x) over the Range $x=2$ to $x=12$ at Intervals of 0·001 (Com*municated* by Prof S. Chapman) B Lambert and K. T Hartley An Investigation of the Effects of Variations in the Radiation Factor on the Efficiency of Dewar Vessels (Communicated by Prof F Soddy) J E. Lennard Jones and W R Cook The Molecular Fields of *Hydrogen Nitrogen, and Neon.* (Communicated by Prof S Chapman) H Florey Observations on the Resolution of Stasis in the Finer Blood Vessels (Communicated by Sir Charles Sherrington.) T S. P Strangeways and Honor B Fell Experimental Studies on the Differentiation of *Embryonic Tissues* Growing in vivo and in vitro, II The Development of the Isolated Early Embryonic Eye of the Fowl when Cultivated in vitro (Communicated by Sir William Hardy) Nesta Ferguson The Aloinae a Cytological Study with especial reference to the Form and Size of the Chromosomes (Communicated by Sir John Farmer)

ROYAL SOCIETY OF MEDICINE, 1, *Wimpole-street* W
TUESDAY, June 22nd.—3.30 P.M GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Edinburgh
WEDNESDAY, June 23rd.—5 P.M Dr John Cowan: Failing Heart (George Alexander Gibson Memorial Lecturer)
THURSDAY.—5 P.M (last Memorial Lecture)

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1, Wimpole-street, W
MONDAY, June 21st, to FRIDAY, June 25th.—Special afternoon demonstration in clinical surgery at the Great Ormond-street Hospital, by Mr H Tyrrell Gray on *Thursday, at 2.30 P.M. Special* demonstration in clinical ophthalmology by Mr Goulden on Friday at 12.45 P.M at the Royal London Ophthalmic Hospital. These demonstrations are open to all members of the medical profession without fee.—HOSPITAL FOR DISEASES OF THE *HEART AND LUNGS* Victoria Park, E. Special Course in Diseases of the Chest The Hospital is open to all post graduates attending the Course, and in addition special demonstrations (clinical and laboratory lectures &c, are arranged. Second week.—LONDON TEMPERANCE HOSPITAL, *Hampstead road*, N W Post graduate course for practitioners. Daily, 4.30 to 6 P.M. Lecture for half an hour and demonstration for one hour Medicine surgery, and the special departments Second week.—ALL SAINTS HOSPITAL, Vauxhall *Bridge road*, S W Special course in Urology Clinical and cystoscopic demonstrations Monday and Wednesday afternoons, and evenings Thursday and Saturday afternoons. Special lecture on June 23rd by Mr R. Coyte on Early Points in the Diagnosis and Cystoscopic Appearances of Prostatic Enlargements. Further information from the Secretary, Fellowship of Medicine

NORTH EAST LONDON POST GRADUATE COLLEGE, Prince of Wales's General Hospital Tottenham N
MONDAY, June 21st.—10 A.M. Surgical Out patients Mr W E. Tanner 10.30 A.M., Gynaecological Operations Mr A E. Giles Throat, Nose and Ear Operations: Mr W Ibbotson 2 P.M., Medical Surgical and Gynaecological Clinics Operations. 6.30 P.M., Venereal Department Mr R Coyte
TUESDAY.—2 P.M., Medical Surgical, Throat, Nose and Ear Clinics Operations 3 P.M., Dr J K C Laing Demonstration of cases illustrating Types of Mental *Disease at the Colney Hatch Mental Hospital*, New Southgate, N
WEDNESDAY.—10.30 A.M., Surgical Operations: Mr F Gillespie 2 P.M., Medical Eye and Skin Clinics, Operations 3 P.M., Dr R. C Shanks X Ray Demonstration of Tumours of Bone. 5.30 P.M., Venereal Department.
THURSDAY.—10.30 A.M., Dental Out patients Mr E. B Pierrepont. 2 P.M., Medical Surgical and Throat Nose and Ear Clinics, Operations. 5 P.M., Operations
FRIDAY.—10.30 A.M Eye Operations Mr N Fleming 2 P.M., Surgical Medical, and Children Clinics Operations. 3 P.M., Gynaecological Clinic 6.30 P.M., Venereal Department Dr F L. Provis

CANCER HOSPITAL, Fulham road, S.W
WEDNESDAY, June 23rd.—4.30 P.M., Mr Cecil A Joll *Malignant Disease of the Thyroid.*
FRIDAY.—4.30 P.M., Mr E. S. Rowbotham Intratracheal Anaesthesia

NATIONAL HOSPITAL, Queen-square, Bloomsbury, W C.
MONDAY, June 21st.—2 P.M., Dr Hinds Howell: Out patient Clinic. 3.30 P.M., Dr Kinnier Wilson The Neuro Muscular System (2)
TUESDAY.—2 P.M Dr Walshe Out patient Clinic, 3.30 P.M., Dr Grainger Stewart: The Significance of *Ocular Symptoms in Neurology*
THURSDAY.—2 P.M. Dr Kinnier Wilson Out patient Clinic 3.30 P.M., Dr *Martin: Progressive Muscular* Atrophy
FRIDAY.—2 P.M Dr Adie Out patient Clinic 3.30 P.M., *Dr Greenfield: Pathology of Cerebral and Spinal* Tumours

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL Gray's Inn road, W C.
WEDNESDAYS and FRIDAYS.—1.30 P.M., Course in Method of Examination and Diagnosis. Free to clinical assistants

LONDON SCHOOL OF DERMATOLOGY, ST JOHN'S HOSPITAL, Leicester-square, W C
TUESDAY, June *22nd.—5 P.M., Dr W. Griffith* The Bullous Eruptions
THURSDAY.—5 P.M., Dr J M H MacLeod: Tuberculosis Cutis

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES Quay-street.
THURSDAY, June 24th.—4.30 P.M., Dr Higgins: The Response of Skin Diseases to Radiations.

UNIVERSITY OF SHEFFIELD POST GRADUATE CLINICS
*FRIDAY, June 25th.—3.30 P.M (at the Royal Infirmary), Dr Yates:* Some cases illustrating Problems of Treatment.

# Appointments.

GABRIEL, W B, M S. Lond., F R.C S. Eng, has been appointed *Hon Surgeon to the Royal Northern Hospital.*

McSWINEY, B A, M B, B.Ch. B.A O Dub, Professor of Physiology in Leeds University

PEARSON, W J M.A M D, B Ch Oxon., M R C.P Lond, Honorary Physician to Cheyne Hospital for Children Chelsea.

SALISBURY, WALTER, M D., M.S Lond., F R C.S. Eng., Honorary Assistant Surgeon, Northampton General Hospital.

Queen Charlotte's Maternity Hospital JONES A MORRIS, M D Manch., Assistant Medical Officer to the Antenatal Department SIMPSON, G M B, B.S. M R.C.P, Senior Resident Medical Officer, JOHNSTON H W., M B. Tor, F R C.S. Edin. Assistant Resident Medical Officer

West Bromwich and District Hospital PARSONS, L. G., M.D., *F R.C P Lond*, Hon Consulting Physician, GRAHAM, L., M B., B.S Lond, F R.C.S Eng., Hon Consulting Gynaecologist MILNER, HAROLD G V, M.B, Ch.B. Birm, M R.C.S., L.R.C P Lond., Hon Surgeon

Certifying Surgeons under the Factory and Workshop Acts: ARMSLEY R., L.R.C P *Lond.*, M.R.C S (Carnforth), MARSHALL, R., M B., Ch.B Glas. (Biggar, Lanark).

# Vacancies.

*For further information refer to the advertisement columns.*

*Association of Surgeons of Great Britain and Ireland, 51, Wimpole-street, W.*—£350 Surgical Scholarship.
*Aylesbury, Ryl. Buckinghamshire Hosp.*—Res. M.O. at rate of £200.
*Cambridge Physiology School.*—George Henry Lewes Studentship. £250.
*Cape of Good Hope.*—M.O.H. £1100.
*Cape Town, Somerset Hospital.*—Supt. £1000.
*Chelsea Hospital for Women, Arthur-street, S.W.*—Hon. S. to Ear, Nose, and Throat Dept.
*Chesterfield and North Derbyshire Royal Hospital.*—Fifth H.S. At rate of £100.
*Cheyne Hospital for Children, Chelsea, S.W.*—Hon. Surg.
*Doncaster Royal Infirmary.*—Third H.S. At rate of £150.
*Dreadnought Hospital, Greenwich.*—H.P. and H.S. Each at rate of £110. Also P.
*Durham County Sanatorium, Wolsingham.*—Locum. £40 a month.
*Evelina Hospital for Children, Southwark, S.E.*—Hon. Dental S.
*Exminster, Devon Mental Hospital.*—Jun. Asst. M.O. £300.
*Indian Research Fund Association, Simla.*—Research Workers on Malaria, also Entomologist. Each at rate of Rs.1500 per mensem.
*Ipswich, East Suffolk and Ipswich Hospital.*—H.P. and Three H.S.'s: Each £100.
*King George V. Sanatorium, Goldalming, Surrey.*—Jun. Asst. M.O. £500.
*Liverpool, Eye and Ear Infirmary, Myrtle-street.*—H.S. £100.
*London Hospital, E.*—First Asst. to Children's Dept. £400.
*London Temperance Hospital, Hampstead-road, N.W.*—Cas. O. At rate of £120. Also H.P. At rate of £100.
*Macedonia, Friends' Council for International Service.*—Medical Work. £14 per month.
*Manchester Radium Institute, Nelson-street.*—Asst. Radiologist.
*Manitoba University.*—Asst. Prof. of Anatomy. $3,000.
*National Hospital, Queen-square, W.C.*—Asst. P.
*Plymouth, South Devon and East Cornwall Hospital.*—Jun. H.S.
*Portsmouth, Royal Hospital.*—Cas. O. At rate of £100.
*Queen's Hospital for Children, Hackney-road, E.*—Cas. O. At rate of £100.
*Reading, Royal Berkshire Hospital.*—Three H.S.'s. At rate of £150.
*Royal Free Hospital, Gray's Inn-road, W.C.*—Cas. O. £150.
*Royal London Ophthalmic Hospital, City-road, E.C.*—Sen. H.S. At rate of £150. Also Refraction Asst. At rate of £100.
*Royal Northern Hospital, Holloway, N.*—Asst. Surg. O. £75.
*Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.*—Hon. Med. Reg.
*St. Bartholomew's Hospital Medical College.*—Sen. Demonstrator and Demonstrator of Physiology.
*Sheffield, Jessop Hospital for Women.*—Sen. Res. O. £250. Also Asst. H.S. At rate of £100.
*Sheffield Royal Infirmary.*—Two H.S.'s., H.P., Asst. Cas. O. and Ophth. H.S. All at rate of £80.
*Sheffield, South Yorkshire Mental Hospital.*—M.O. £400.
*Southampton, Free Eye Hospital.*—Locum Tenens Ophth. H.S.
*Sudan Medical Service.*—Four M.O.'s. £E.720.
*University of London.*—External Examiners.
*Virol Ltd.*—Research Scholarship in Clin. Pathology. £200.
*Westminster Hospital, Broad Sanctuary, S.W.*—Asst. Med. Reg. and Asst. Surg. Reg. Each at rate of £50. Also Asst. S. to Ear, Nose, and Throat Dept.

# Births, Marriages, and Deaths.

## BIRTHS.

Cairns.—On June 8th, at Woodcroft, Loughton, the wife of H. W. B. Cairns, M.B., F.R.C.S., of a son.

Shepherd.—On June 8th, at St. Andrew's-crescent, Cardiff, the wife of Dr. C. W. Shepherd, of a son.

Urwick.—On June 11th, Joan Bedford Urwick, L.R.C.P., M.R.C.S., the wife of L. Urwick, of Lawn-road, Hampstead, N.W., of a daughter.

## MARRIAGES.

Brown—Bannerman.—On June 9th, at All Saints' Church, High Wycombe, Walter Graham Scott Brown, M.B., B.Ch., to Margaret Affleck Bannerman, M.B., B.S., only daughter of Dr. and Mrs. G. D. K. Bannerman, of Riversdale, High Wycombe.

Gray—Carr.—On June 12th, at Hampstead, Oliver Gray, M.B., Ch.B., to Marjorie Howard, eldest daughter of Mr. and Mrs. Francis H. Carr.

Taylor—Ross-Johnson.—On June 10th, in London, Julian Taylor, O.B.E., M.S., F.R.C.S., to Edith Margaret Ross-Johnson, M.B., B.S., M.R.C.S., L.R.C.P.

## DEATHS.

Charlesworth.—On June 5th, at his residence, Hastings-road, Ealing, Henry Charlesworth, C.M.G., Brevet-Colonel (late R.A.M.C. retd.).

Cotes.—On June 10th, at a nursing home, Plymouth, following operation, Digby Francis Baynes Cotes, M.R.C.S. Eng., &c., of Week St. Mary, aged 63 years.

James.—On June 7th, Stanlake James, M.R.C.S., L.R.C.P., of St. John's-road, Putney, aged 61.

Morris.—On June 14th, at Connaught-square, Hyde Park, W., Sir Henry Morris, Bt., aged 82.

Mott.—On June 8th, at the General Hospital, Birmingham, Sir Frederick Walker Mott, K.B.E., M.D., LL.D., F.R.S., F.R.C.P., of Nottingham-place, W., aged 72.

*s. 0d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Comments, and Abstracts.

## THE TECHNIQUE OF RADIUM THERAPY.

At the Radium Institute, London, inquiries are frequently received as to the precise methods adopted in the treatment of various cases. It has therefore been thought expedient by the medical superintendent, Mr. A. E. Hayward Pinch, to publish a short manual of technique in radium therapy as a supplement to the "Clinical Index of Radium Therapy" which was published in 1925. The procedures described and illustrated are those used at the Radium Institute. It is not claimed that they are necessarily the best methods, but they are found in practice to give satisfactory results.

The book, of which any practitioner may obtain a free copy on application to the secretary at the Institute (Riding House-street, London, W. 1) contains some 40 pages and the same number of plates. It is divided into nine chapters headed respectively: General Considerations; Precedent Operations; Handling of Radium Apparatus; Surface Applicators: their Use in Special Situations; Tube Apparatus; Preliminary Measures; Insertion of Tubes; Use of Tube Apparatus in Special Situations; Complications and Sequelæ.

The summary of its contents, given below, is notexhaustive, but will serve to indicate its general scope and to point out some observations of especial interest. The need for much clinical experience and surgical skill on the part of the radiologist and the advantages of coöperation with surgical colleagues, are emphasised throughout. Another point of importance which is apt to be overlooked is that the general health of all patients should be brought to as high a standard as possible before radium treatment is commenced. The principal conditions which militate against successful radium therapy include anæmia, cachexia, and diabetes. Inflammation, sepsis, and previous X ray treatment are also contra-indications to radium therapy under the following conditions:—

*Inflammation.*—Tissues while acutely inflamed should not be subjected to radium irradiation, as it is impossible accurately to predict the extent and degree of the resultant reaction under such conditions. A more or less complete subsidence of the active inflammatory process must be secured before radium treatment is given. The chronic inflammatory changes, accompanied by dense leucocytic infiltration, which are frequently met with at the growing edges of malignant tumours are, on the other hand, favourably influenced by radium irradiation, and their resolution is often speedily induced.

*Sepsis.*—This complication is a frequent and very harmful one, and is specially apt to prove troublesome in the mouth, larynx, vagina, and uterus. Attempts should be made to secure a condition of surgical cleanliness before radiation. The removal of sloughs, the opening and cleansing of sinuses and abscesses, followed by repeated and regular irrigation of the regions with suitable antiseptic solutions, should be carried out for several days prior to the use of radium, or an increase of the septic process will follow.

*Previous X Ray Treatment.*—Areas which have been subjected to many X ray exposures are often leathery, avascular, and devitalised, and have little power of satisfactory repair. When treating such sites the dosage administered should be distinctly low or the tissues may break down over a wide area, giving rise to a painful and intractable ulceration.

### *Precedent Operations.*

Before subjecting a patient to radium treatment it is often advisable to perform some operation, either in order to remove a source of irritation or for some other purpose. Such operations include extraction of teeth and removal of diseased bone before treating epithelioma of the tongue, mouth, or jaw; tracheotomy, to enable a prolonged intra-laryngeal exposure to be given, or as a precautionary measure against œdema in growths in the inferior pharyngeal, laryngeal, or post-cricoid regions; gastrostomy, in carcinoma of the œsophagus; colostomy, in growths of the sigmoid flexure or rectum; and cystostomy, in cases of carcinoma of the bladder of long standing.

### *Radium Apparatus.*

Frequent contact with radium and radon apparatus, even though the period of each manipulation be of extremely short duration, will sooner or later induce definite inflammatory and trophic changes in the fingers and hands of the workers, unless certain precautions are rigidly adhered to. The changes are due to the cumulative effect of small repeated doses of radiation, principally of the beta type. All apparatus should be handled with wooden or rubber-covered metal forceps, at least a foot in length, and the hands should be protected with leather gloves. Tubes and needles whilst being threaded should be held with specially adapted forceps, the silk employed having been treated with hard paraffin wax. No nurse or attendant should be allowed to make up or prepare apparatus daily for a period of time exceeding three months, and an equal or even longer period of rest from contact with radium must be given before the work is resumed. As an additional precaution against the cumulative effect of the gamma radiation, which in susceptible subjects may initiate general disturbances—anæmia, amenorrhœa, &c.—the workers should sit at a table which is covered with lead 5 cm. in thickness, a leaden breast-plate being applied to the edge of the table of such height as completely to cut off all emergent rays from the body and head of the workers. The stock of radium should be kept in a separate room, situate as far as possible from the radium workroom, to which short visits should be paid at need. Apparatus when prepared for use should be placed immediately in carrying boxes lined with thick lead and provided with a long, stout leather sling. Emanation tubes and seeds are conveyed from place to place in a special shaped carrier.

*Surface Applicators* are used (1) unscreened or lightly screened, for the treatment of superficial growths and conditions; (2) heavily screened, and emitting only the gamma radiation, for employment in deep radium therapy. Their size ranges from 1 to 30 square cm., and their shape may be circular, square, or rectangular. They are usually made with radium sulphate. It is also possible to utilise radium tubes as surface applicators by means of shallow leaden trays filled with hard paraffin wax melting at 60° C. The tray is laid upon a hot plate until the wax melts, the tubes are placed in the melted wax, their number and spacing being regulated by the activity desired, the tray is then removed from the hot plate, and the wax speedily cools and solidifies, retaining the tubes securely in accurate position. With growths of irregular and uneven outline, dental modelling compound is of particular value, as it enables the disposition of the tubes to be made in such fashion as to secure the most effective radiation. The Institut du Radium at Paris employs an embedding compound made of beeswax 100 g., paraffin wax (melting at 62° C.) 100 g., pine sawdust 20 g. This can be worked quickly and cleanly, and is most useful when treating a large surface area with applicators of any kind.

General directions for the use of surface applicators are given and also detailed directions for the use of surface applicators in special situations such as the orbit, the mouth, the breast, the thorax and abdomen, and the vulva, perineum, and anus.

*Tube Apparatus.*—The five principal forms of tube apparatus are needles, cylinders, "hour-glass" tubes, "window" tubes, "sleeve" tubes, and "seeds."

*Needles* are used for actual insertion into the substance of growths. Those in general use at the Institute have walls of silver 1 mm. in thickness, or platinum 0·8, 0·4, or 0·5 mm. in thickness. One extremity is pointed, the point being of iridium in the platinum tubes. The other extremity is closed with an eyeletted stopper, or a screw thread, into which a pliable silver wire can be inserted. The length of the tubes ranges from 1 to 3 cm., and their diameter from 0·9 to 2·2 mm. They contain from 1 to 25 mg. of radium element.

*Cylinders.*—These tubes have a blunted free extremity, and are closed by an eyeletted stopper or screw thread. They are employed chiefly for the radiation of cavities—e.g., bladder or uterus—and have walls of 2 mm. of lead or 1 mm. of silver. They vary from 1 to 6 cm. in length, and from 3 to 7 mm. in diameter. They contain 12·5, 25, or 50 mg. of radium element.

*"Hour-glass" Tubes* are of special service in the treatment of malignant strictures of the œsophagus or rectum, being easily retained in accurate position. They have walls of 2 mm. of lead or 1 mm. of silver, and are made in lengths varying between 2 and 10 cm. Their charge is usually 50 mg. of radium element.

*"Window" Tubes.*—A leaden tube with walls 2 mm. in thickness has a window occupying one-third of its circumference. This gap is closed with a screen of 0·1 mm. of lead, 0·5 or 1·0 mm. of silver. A tube of radium salt or radon is inserted into the tube, which is placed so that ulcerated or fungating portions of the growth receive the lightly filtered radiation, and the remainder the heavily filtered rays.

*"Sleeve" Tubes.*—A silver tube with walls of 0·5 mm., inserted in a collar or sleeve of lead, 1·5 or 2·0 mm. in thickness, which encircles half or two-thirds of its length, is useful in the treatment of small localised ulcerated recurrences in the vaginal vault after hysterectomy.

Radon may be used instead of radium element in any of these tubes.

*"Seeds."*—This term is applied to tiny capillary glass tubes, 2 to 3 mm. in length and 1 mm. in diameter, which are charged with 1 to 2 millicuries of radon, and permanently buried in growths, unscreened. One millicurie emits 132 millicurie-hours of radio-activity in its passage to complete decay. The excessive fragility of these "seeds" necessitates the use of special apparatus for their insertion.

### *Measures Preliminary to Treatment by Radium.*

*Aspiration* is necessary or advisable before treating cystic or caseating growths—e.g., cystic hygromata or caseating tuberculous glands. In growths affecting the maxillary antrum or nasal fossæ, and in morbid conditions of the uterine mucosa, a preliminary *curettage* is often advantageous. Exuberating fungating growths of the palate, fauces, lip, vulva, and cervix are particularly suitable for preliminary treatment with the *diathermy* knife or button. Cases of annular carcinoma of the œsophagus or rectum sometimes require *dilatation* before a radium tube can be inserted. *Douches* of tr. iodi. ʒi to 1 pint of warm water, t.d.s., may be required for patients suffering from ulcerated carcinoma of the uterus. If the iodine douche prove irritating, glycothymoline (1–20) may be substituted. The two last douches before radium is inserted should be of flavine, 1 in 2500.

*Local Anæsthesia.*—The most generally useful local anæsthetic is a solution of cocaine and adrenalin, injected hypodermically. Cocaine hydrochlor. 10 per cent. solution, is of great value when inserting tubes or needles into the pharynx, palate, fauces, or tonsils. Novocaine 5 per cent. is to be preferred for the urethra, vulva, anus, and rectum.

*General Anæsthesia.*—Nitrous oxide gas and oxygen is the combination of choice; but if deep muscular relaxation is necessary a mixture of chloroform and ether (open method) may be used. Endotracheal insufflation by the double tube method is useful in growths involving the upper respiratory tract, and in operations below the level of the umbilicus spinal analgesia by stovaine is valuable.

### *The Technique Employed.*

Mr. Pinch gives a succinct account of the technique employed in the insertion of tubes for surface growths by special forceps with longitudinal grooves, by trocar, cannula, and plunger, and by means of a stiff but pliable silver wire attached to one extremity of the tube. Wood's fusible alloy is employed in the connexions between wire and tube when the tubes are inserted into cavities such as rectum or bladder. This alloy melts at 60° C. and is used to seal the stopper in the screw-threaded mouth of the tube. The distal end of the screw stopper is attached to the pliable silver wire by means of ordinary solder (melting-point 170° C.). When it is desired to remove the radium container from the interior of the tube its attached extremity is gently heated in a gas flame until the fusible alloy melts, when the stopper is readily unscrewed and the tube emptied of its contents. The excessive fragility of "seeds" necessitates the employment of a special form of applicator—a simple and effective one being a trocar and cannula of very fine bore.

A *discussion* follows on the use of tube apparatus in special situations, including nose, mouth and tongue, pharynx and fauces, larynx, œsophagus, stomach, colon, rectum, uterus, bladder, prostate, and urethra. These sections can hardly be summarised with advantage, for the significance of the advice depends on details.

### *Complications and Sequelæ.*

*Bacterial Infection.*—Radium irradiation appears definitely to lower the resistance of some patients to any kind of pyogenic infection for two or three weeks, and an acute inflammatory condition, almost erysipelatoid, may supervene. For inflammation on an unexposed part of the body collosol ichthyol ointment is useful; for the face, neck, or hands a good cold cream containing boric acid, or a small amount of hydrarg. amm. chlor. is recommended.

*Telangiectasis.*—Some degree of telangiectasis will almost inevitably follow periodic radium irradiations of any area of the skin. Untreated telangiectases tend to get larger, so that if they are situated in face, neck, or hands they should be treated carefully with a fine-pointed electric cautery.

*Pigmentation* occurs less frequently than telangiectasis, and in the early stages may be lessened by application of weak bichloride of mercury and glycerine lotion. Its development is aggravated by exposure to sunlight, and affected areas should be protected with grease paint in bright weather.

*Ulceration.*—A somewhat intractable superficial ulceration is occasionally noted over the surface of nævoid lesions which have received numerous treatments. Treatment should be interrupted for at least six months, and any subsequent exposures should be of shorter duration and given at longer intervals.

*Annular fibrosis* results from frequent repetition of exposures with heavily-screened tube apparatus within cavities, notably the rectum and vagina. It requires regular dilatation or may ultimately cause occlusion of the canal.

*"Radium Burns."*—This term should not be applied to the vesication and ulceration following an unscreened

radium exposure. Here a destructive reaction has been deliberately produced and satisfactory repair can be anticipated. The term should be reserved for the few instances in which the exposure and dosage have been prolonged and excessive, owing to accident, negligence, or ignorance. The ulceration is extreme, pain is severe and persistent, and repair always slow and frequently imperfect. The treatment of these true "radium burns" demands much patience. The ulcerated area is often covered by a foul tenacious washleather slough, the separation of which can be hastened by plugging the cavity daily for three or four hours with gauze soaked in a 1 in 4 solution of enzymol. On removal of the plugs the cavity should be irrigated with a 1–10 solution of hydrogen peroxide and gently dried. As a regular dressing, an ointment containing 5 per cent. of acid carbolic in a lanolin base, chloretone compound ointment, or emollientine (Parke, Davis and Co.) are of value. When the pain and tenderness have largely disappeared scarlet red ointment, or zinc ointment containing 2 per cent. of ferri subcarb. and 0·5 per cent. of argyrol is recommended. When granulation is active and repair is taking place, granulogen or collosol argentum pasta expedite healing.

## THE TEACHING OF SWIMMING.

*To the Editor of* THE LANCET.

SIR,—Last Easter there was a sad accident in the River Brent; two boys, who were paddling in it, stepped into a part which deepened suddenly and were both drowned; one boy was 14 years of age, the other 13; neither of them could swim. The education authorities do not undertake the teaching of swimming, but it is included in the education code as an approved physical exercise; only one or two elementary schools have their own swimming bath and only one or two municipalities have provided separate swimming baths for their school-children. However, swimming instruction has been taken up by the Amateur Swimming Association, and its education committee has prepared a small handbook,[1] fully illustrated, setting forth how to teach a class by land drill and in the water. It is recommended that children of 8 years of age or older be taught in classes of 5 and 20. A large number of school-children learn to swim, many of them very well, as may be seen at the schools' swimming galas in the autumn, but all the children do not learn; it may happen that there are so many children that they have to be sent in classes of 50, which is more than one instructor can teach in the allotted time, also that there is no place a second summer for the child who has not learnt the first, also that no land drill has been held.

They have a better way in the army schools: they send all their children in their ninth summer to their baths to be taught in classes of 20 by the swimming instructor; thus, all army children of 10 years of age can swim. This though good is not perfect; in British Guiana, the reed country of Irak, and the South Seas the children learn to swim as soon as they can walk; this is a great advantage, for during childhood they will enjoy bathing more and become better swimmers. The South Sea Islanders taught the Australians the crawl stroke, and they us.

English children can be taught to swim when quite young; her parents taught a little girl of 4 to swim, and a boy of 5 also could swim; a little girl of 5 floats in her domestic bath and can turn over in the water and pick up objects. 96 per cent. of children attend the elementary schools, the remaining 4 per cent. attend kindergarten or preparatory schools when young; only a few of these schools have their own swimming baths, but quite a small bath would be sufficient for teaching a few children at a time. Swimming once learnt, as Sancho Panza said, is never forgotten; it is good exercise, for it employs most of the muscles, and equally on the two sides of the body; it is a pleasant pastime, but little interfered with by rain, and inexpensive; but there are various grave dangers connected with it, and the public should, each summer, be warned of these; recently a girl of 13 was swimming in a public bath, she was seen to sink, was rescued, respiration was partially restored, but she died later.

I am, Sir, yours faithfully,

Putney, S.W., June 13th, 1926. WALTER EDMUNDS.

⁂ Mr. Edmunds's letter is well-timed for the beginning of the bathing season. The teaching of swimming should be an obligatory part of the educational curriculum of any island State. An important section of the great Dusseldorf Medical Exhibition is devoted to swimming on the ground that it stands first among healthy sports in hardening the body and making it resistant to disease. The slogan of this section might be taken over thus: "Every Briton a swimmer, every swimmer a life-saver."—ED. L.

## ADVICE ON MEDICAL ETHICS.

AT the annual meeting of the London and Counties Medical Protection Society (see p. 1232) the report, which was adopted, contained the following examples of serviceable advice given to members of the Society on ethical difficulties.

(1) A member wrote to the Society complaining that consultants saw patients of his without his knowledge, advising them and prescribing for them, and then writing to him informing him of what they had done. The member was advised that it had often been contended, with much force, that as a barrister will only advise through a solicitor, so a consultant should only advise through the patient's usual medical attendant, but that this was not the invariable custom in the medical profession. He was told, however, that it was desirable for a consultant to advise and prescribe through the medical attendant, if known, thus giving him an opportunity to discuss any change of treatment, &c., beforehand.

(2) A member inquired if it would be proper for him to take a radiogram for a patient who was consulting an osteopath, and to explain to the patient what it indicated. He was advised that by doing so he might be assisting an unqualified person to do work requiring surgical knowledge and skill. He was also told that it was understood that medical practitioners specialising in X rays declined to see patients except on the recommendation of a doctor, and that the films and reports were only handed to that doctor, and not in any case given to the patient. The member was advised that this seemed to be the correct procedure.

(3) A member wrote that an inquiry was to be held by a local ethical committee into an accusation of unethical conduct made against him. A complaint had been made against him by a medical practitioner that he had seen a patient of his otherwise than in consultation. It transpired that the patient had refused to continue under his usual medical attendant, and wished to change. The member was advised as to his defence, and was recommended to conduct his own defence, and not to be legally represented. After the inquiry the ethical committee decided that he had not offended against any ethical law and had not acted in any way contrary to the ordinary custom of the profession.

## CANADIAN MEDICAL DIRECTORY, 1926.

THE ninth edition of the Canadian Medical Directory and Physicians' Handbook, which has just reached us, contains alphabetical and topographical lists of some 9000 physicians, 2850 dentists, and 3000 druggists living within the Dominion. The volume opens with a section of 90 pages reciting the *Canadian Medical Act of 1880, the names of the Medical* Council and of the Board of Examiners, as well as instructions for registration and examination. A brief account is then given of each of the nine universities—Alberta, Dalhousie, Laval, Manitoba, McGill, Montreal, Queen's, Toronto, Western Ontario—with the professorial staff, examination regulations, and other academic information necessary for medical and dental students. The Directory itself, under the heading of each province, contains the medical laws and regulations in force locally, along with a list of hospitals, sanatoriums, medical and dental societies, and the personnel of the public health staff. The Physicians' Handbook consists of a compendium of useful information for quick reference, including the Narcotic Drug Act of 1923, a classified list of specialists, and an alphabetical list of chemists and chemical companies, and of dealers in druggists' sundries and physicians' and surgeons' supplies. The book is well indexed and easy of reference. In paper cover the price is 7 dollars; bound in cloth 8 dollars. It is published and printed by Messrs. A. P. Pigeon, Ltd., of 109, Ontario-street East, Montreal, Canada.

DR. Joseph Anthony Ferriero has been appointed by the King a Nominated Member of the *Council of Government of the Colony of Mauritius.*

PROF. S. Mallannah, of Osmania Medical College, writes that the Parel Laboratory at Bombay is likely to introduce some improvement in Haffkine's prophylactic fluid against plague. It has been found that the *clear filtrate or supernatant* fluid possesses greater antigenic value than the whole fluid, and hence the sediment is non-essential. Prof. Mallannah made a similar observation many years ago (*Indian Medical Record*, Jan 3rd, 1900). The filtrate does not give rise to the troublesome induration at the seat of injection, which may last for three or four months.

*West German Spas: Corrigenda.*—In the article on pp. 1164–65 of THE LANCET of June 12th, under Schlangenbad "steam bath" should read "*stream* bath," and under Wildungen the penultimate sentence by omission of two commas should read "*although* the water drinking and bathing are considered . . . ."

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[1] Swimming Instruction. Simpkin, Marshall & Co. 1s.

# The Oliver-Sharpey Lectures
ON
# CARBOHYDRATE METABOLISM IN HEALTH AND DISEASE.

*Delivered before the Royal College of Physicians of London*

BY HUGH MACLEAN, M.D. ABERD., D.SC. LOND., M.R C.P. LOND.,

PROFESSOR OF MEDICINE, UNIVERSITY OF LONDON; DIRECTOR, CLINICAL MEDICINE UNIT, ST. THOMAS'S HOSPITAL.

## LECTURE II.*
*Delivered on May 6th.*

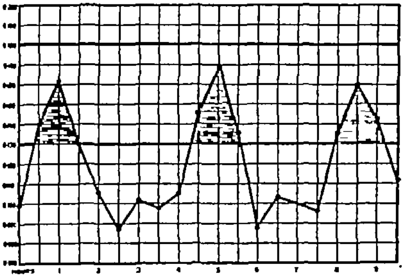
IN my last lecture it was indicated that the chronic *diabetes of the elderly patient is really not* diabetes at all but a diminished power for storing sugar, and that the chief organ concerned appears to be the liver. It is an interesting point that though storage of sugar in the body can be apparently upset without oxidation being interfered with, yet the converse is never true. Defective oxidation is apparently always *associated with defective storage.* Since defective oxidation of foodstuffs is the fundamental difficulty in diabetes, it follows that diabetes is necessarily accompanied by a difficulty in storage as well. Indeed, one of the very earliest indications of diabetes is an inability on the part of the organism to store sugar, and this defect can sometimes be *demonstrated at a stage when there is as yet* little or no evidence of any difficulty in oxidation. Clinically, this defective oxidation is best indicated by the presence of acetone and diacetic acid in the urine. In true diabetes these bodies are probably always present. It must not be considered, however, that the presence of these ketone bodies in urine *containing glucose necessarily* indicates that the condition is diabetes. Indeed, when acetone is tested for by Rothera's method, which is the test now universally employed, it is by no means uncommon to get a quite definite reaction in normal urine. The colour which develops is certainly more red than that produced by acetone, but even to the experienced *observer this complication* presents difficulties, and there is little doubt that many urines are supposed to contain acetone when acetone is really absent. The nature of the substance producing this anomalous reaction is at present unknown, but it differs from acetone in being non-volatile on boiling. In all suspicious cases, therefore, the urine should be *thoroughly boiled* before doing Rothera's test. If a reaction persists after boiling, the substance present is not acetone. There are various conditions besides diabetes in which glycosuria is accompanied by the presence of acetone in urine. The importance of this combination is very great, and an attempt will be made later to show how these conditions can be differentiated from true diabetes.

### RENAL GLYCOSURIA.

It has already been pointed out that in some individuals the renal threshold for sugar is so low that sugar may leak through the kidney, and yet no disturbance whatever of carbohydrate metabolism be present. Until comparatively recently it was thought that this renal glycosuria was of rare occurrence, but experience shows that it is really much more common than diabetes. Unfortunately, many patients suffering from this innocuous condition are still being treated as if they were suffering from diabetes. With modern means of investigating glycosuria there is no excuse for this, for the condition can always be diagnosed with *certainty* if the necessary care is taken. Since the normal renal threshold is in the region of 0·18 per cent. blood-sugar, and since the blood-sugar in every normal individual constantly rises very nearly to this point after meals, it follows that if the threshold is lower than normal, sugar will pass into the urine during the various periods of the day when the blood-sugar is high. In the healthy individual the daily variation in blood sugar might be represented by the curve. (Chart 1.)

Now, if in such an individual the threshold for sugar is in the region of 0·13 per cent. or so, instead of 0·18 per cent., then sugar would be constantly passed into the urine during the time the blood-sugar was above 0·13 per cent. These periods are represented by the *shaded part in the curves. This is the most* common type of renal glycosuria. Here the urine passed for an hour or two after a meal would contain sugar, but urine passed immediately before the following meal would be sugar-free, for at that time the blood-sugar would be considerably below the 0·13 per cent. threshold. In some cases, however, the threshold is lower than the normal blood-sugar value of 0·1 per cent. In this type of case sugar is constantly passed into the urine, and the condition is virtually the same as that artificially induced by the administration of phloridzin. Here there may be a severe drain *on the carbohydrate stores of the body with the* result that comparatively *large amounts of acetone and diacetic acid may appear in the urine between meals.* Shortly after a starch meal these ketone bodies are much reduced or disappear altogether, to reappear again after some hours.

CHART 1.



Daily variation of blood-sugar in health.

This combination of glycosuria and marked ketosis *naturally suggests that the case is one of ordinary* diabetes, and it requires very great care to ascertain what its true nature really is. Though this severe type of renal glycosuria is not very common, I have actually seen two patients suffering from this condition within the last three months. It is well recognised that reduction of the sugar reserves in the tissues results in marked ketosis in the normal individual, and in these cases of severe renal glycosuria with a very low threshold the amount of sugar lost through the kidneys is so great that the carbohydrate stores in the body are constantly being depleted; indeed, the drain of sugar through the urine is so intense that there is little chance given for any efficient storage, so that many of these patients must always be on the verge of ketosis. Such patients may show no symptoms which could be definitely ascribed to diabetes, but they sometimes feel out of sorts, and under these circumstances the finding of both sugar and ketone bodies in the urine naturally suggests a diagnosis of diabetes.

The figures in the following table were obtained from a case of this kind. *It will be seen that the* effect of the ingestion of glucose on the blood-sugar was exactly what might have been expected in the normal individual, yet this patient was passing sugar at the rate of about 5·6 g. per hour, while the urine at the same time contained a considerable amount of acetone. The effect of the ingested sugar in temporarily getting rid of the acetone is well seen.

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* Lecture I. appeared in THE LANCET of June 12th.

*Case of Renal Glycosuria with Ketosis.*

Breakfast at 8.30 A.M. 50 g. glucose in 100 c.cm. taken at 12 noon.

| Time. | Per cent. sugar in urine. | Acetone reaction in urine. | Total acetone in mgr. per 100 c.cm. | Blood-sugar. | R.Q. |
|---|---|---|---|---|---|
| 12 | 5 | Pos. | — | 0·087 | — |
| 12.30 | — | — | — | 0·133 | — |
| 1 | — | — | — | 0·168 | 1 |
| 1.30 | 6·5 | Pos. | 13·2 | 0·104 | 0·75 |
| 2 | 6·8 | Faint reac. | 2·7 | 0·129 | — |
| 2.30 | 6·6 | Neg. | 0 | 0·095 | — |
| 3 | 7 | " | 0 | — | — |
| 6 | 5·4 | Pos. (slight). | — | — | — |

The bladder was emptied at 12 noon but no further specimen could be obtained till 1.30. After this the patient was able to pass half-hourly specimens. After two hours acetone disappeared entirely from the urine, to reappear again some hours later. One hour after taking the sugar the respiratory quotient had risen to 1.

While taking ordinary diet this patient's urine always contained from 4 to 5 per cent. sugar along with very considerable amounts of acetone. Indeed, as far as the urine was concerned, there was nothing to distinguish this case from one of typical diabetes. The lack of symptoms taken in conjunction with the normal sugar-tolerance curve and the fact that the taking of sugar removed the acetone bodies all indicated that the condition was one of extreme renal glycosuria. This view was also supported by the fact that sugar taken by mouth raised the R.Q. to 1. The patient was ultimately put on ordinary diet containing a considerable proportion of starch, while some carbohydrate was also given occasionally between meals.

Renal glycosuria requires no treatment; it never does any harm beyond the loss of carbohydrate which results from its presence. General metabolism is usually unaffected, and as far as any damage to health is concerned, the sufferer from this condition may be looked upon as a normal individual. Frequently the question of life insurance arises in connexion with this glycosuria. The general view of the matter now taken by the more progressive companies is that, provided the patient is otherwise healthy, renal glycosuria need not be considered as a disadvantage. Sometimes a lowered renal threshold is present in true diabetes, but this can be determined by the sugar-tolerance test.

## DANGERS OF INSULIN IN RENAL GLYCOSURIA.

The administration of insulin to a patient suffering from renal glycosuria is an exceedingly dangerous proceeding, for even a small dose may result in producing insulin poisoning of a severe type. The reason for this action of insulin is seen when we consider that insulin symptoms are liable to supervene whenever the blood-sugar gets too low. The continual drain of sugar through the kidneys tends very materially to lower the blood-sugar, so that when the effect of insulin is superadded the result is likely to be disastrous.

That the differential diagnosis between *diabetes mellitus* and *glycosuria innocens* may be very difficult is illustrated by a case recently described by Kulcke. His patient suffered from very marked renal glycosuria —so marked indeed that Kulcke's view was that she was suffering from diabetes as well. The administration of 20 units of insulin at once set up serious hypoglycæmia symptoms. From the description of the case given by Kulcke it would seem that the patient was almost exactly of the same type as the patient described above—just a severe case of renal glycosuria.

## SUGAR-TOLERANCE TESTS IN GLYCOSURIA.

In advanced cases of diabetes there is usually no difficulty whatever in arriving at a correct diagnosis. The patient's symptoms at once suggest that diabetes is probably present, and examination of the urine fully substantiates this suspicion. Indeed, in many of these cases the patient gives a description of his symptoms which more nearly approximates to the typical text-book description of diabetes than is the case in almost any other disease. At this stage the disease is in an advanced state, but in the early stage in which glycosuria is the only well-marked symptom a correct diagnosis may be a matter of extreme difficulty. It is most important, however, that the true nature of the glycosuria should be appreciated at this stage, for if it is not, the patient may be quite unnecessarily subjected to a very severe dietetic régime, or, on the other hand, if the condition happens to be really diabetic, the sufferer may be deprived of the value of early treatment.

Though many suggestions have been made as to the best methods for distinguishing diabetes from glycosuria of various kinds, experience amply proves that by far the most useful method we possess at the present time is the sugar-tolerance test. This test is by no means an ideal method, and it has very marked limitations, yet on the whole it generally seems to give us more information as to the nature of the glycosuria than any other method. The principle of this test has been fully described in my former lecture. It consists simply in giving 50 g. of sugar to the patient and estimating the blood-sugar at half-hourly intervals.

### *Different Curves obtained with Sugar-tolerance Test.*

In the normal individual the blood-sugar should return to normal within two to two and a half hours after the ingestion of 50 g. glucose, and should not exceed 0·18 per cent. at any time during the test. Usually, the normal figure is reached in one and a half to two hours; occasionally it may be delayed to three hours especially in elderly people. Generally speaking, if the blood-sugar does not return to normal in two and a half to three hours after taking 50 g. of glucose, there is something wrong with the carbohydrate metabolism. These results are often expressed in the form of a curve.

In the typical diabetic curve the blood-sugar is, of course, generally rather high to begin with, but afterwards the blood-sugar rises considerably above the threshold line and may continue to rise for two or four hours; it returns to the initial value very slowly or not at all, according to the degree of diabetes present. The essential difference between the normal and diabetic curve is that in the former the threshold value of the blood-sugar is not exceeded so that no sugar appears in the urine after the ingestion of sugar, while in the latter the blood-sugar remains high for a considerable period and then tends to come down very slowly. In renal glycosuria the curve is normal, or indeed rather lower than normal, due to the loss of sugar by leakage through the kindeys. There is, however, one type of curve which is peculiar and which I have named the "lag" curve. Here the blood-sugar, which is usually normal to begin with, very soon reaches a point considerably higher than the normal threshold of 0·18 per cent. In its earlier stages it resembles a diabetic case. Very frequently in such a case the blood-sugar may rise to 0·22 or 0·23 in half an hour. Instead, however, of continuing to rise the blood-sugar quickly decreases, so that in one and a half hours or so it regains the normal value. So far as I have been able to judge by watching patients, this curve does not signify any defect in carbohydrate metabolism. Probably all it means is that absorption is exceedingly rapid and that an excess of sugar enters the circulation before the liver storage mechanism gets into action. So far as a diagnosis is concerned, the curve is of no more significance than that of renal glycosuria. The condition is, of course, associated with a certain amount of transient glycosuria.

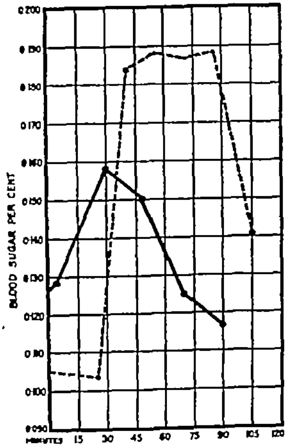
The following figures are examples of the results obtained by the sugar-tolerance test in various conditions. The blood-sugar was estimated in the usual way before giving sugar and at intervals of half an hour afterwards. The dose of sugar, as in all the results of the test described in this paper, was 50 g. glucose.

| | | | | | |
|---|---|---|---|---|---|
| Normal subject .. | 0·10<br>0·11 | 0·105<br>0·14 | 0·14<br>0·17 | 0·09<br>0·13 | —<br>0·11 |
| Diabetes .. .. | 0·14<br>0·11<br>0·28 | 0·22<br>0·19<br>0·34 | 0·28<br>0·38<br>0·41 | 0·34<br>0·31<br>0·40 | 0·26<br>0·27<br>0·45 |
| "Lag" curve .. | 0·09<br>0·11 | 0·18<br>0·23 | 0·32<br>0·14 | 0·13<br>0·10 | 0·09<br>— |
| Renal glycosuria .. | 0·09<br>0·12 | 0·13<br>0·10 | 0·14<br>0·14 | 0·11<br>0·12 | 0·08<br>0·11 |

*Some Factors affecting the Sugar-tolerance Curve.*

The sugar-tolerance curve tends to be affected in various diseases. In some conditions it is higher and longer than normal, indicating a diminished ability to deal with carbohydrate, while in others no appreciable rise in the blood-sugar can be detected after 50 g. of sugar have been taken. One of the most important factors in influencing this curve is starvation. Lack of the necessary amount of carbohydrate food results in a tendency to give a high prolonged curve not unlike that found in diabetes. This effect of starvation is well seen in Chart 2. The curve represented by the heavy line is the normal curve given by a healthy subject under normal conditions. The dotted curve was obtained from the same subject after he had starved for 40 hours. The difference in the two curves is very obvious and shows the marked tendency for starvation to produce a curve indicating a lowered sugar tolerance. The same result is produced when a patient's diet is changed from a more or less normal one to a diet consisting largely of protein and fat. The importance of this observation lies in the fact that very frequently when a medical man comes across a case of glycosuria he takes the view that it is best to assume, for the time at any rate, that the case is really diabetic in nature. He, therefore, begins dietetic treatment at once, and later has the case thoroughly investigated to ascertain whether the glycosuria is or is not of diabetic origin. No doubt this is an excellent principle, but it not infrequently happens that a patient sent for examination in order to ascertain the nature of the glycosuria has had his usual diet changed, and has been on a rather low, almost starch-free ration, for several days previously. The result is that such a patient will probably show a high, long-drawn-out curve, something like what might be expected in an early stage of diabetes. Naturally, unless the person making the examination remembers this effect of change of diet, he will be inclined to look upon the case as diabetic, when it really may be nothing of the kind. The difficulty is further complicated by the fact that the change in diet which produces this effect in the sugar curve gives rise, at the same time, to the presence of acetone in the urine. Such a patient then would show glycosuria and acetonuria, and on examination by means of the sugar-tolerance test would probably give a curve somewhat suggestive of diabetes. In spite of all these points so strongly indicating diabetes, the patient might really be suffering from nothing more than renal glycosuria. It is most important, therefore, when carrying out a sugar-tolerance test, to ascertain carefully the immediate previous history of such a patient, particularly with regard to diet. If the diet has been changed recently, and the new diet contains much less starch than he was accustomed to take, then a curve indicating lowered sugar tolerance, even when associated with acetonuria, may be of no significance. These points are of very great clinical importance, for many patients are labelled diabetic after thorough investigation simply because the investigator does not appreciate the above points. The following figures were obtained from a young female patient aged 19, who had been treated for three weeks for diabetes before a test was carried out. When I examined her she was very thin and weak and presented the usual superficial appearances of a diabetic patient. She was on a very low diet, but despite this fact the urine contained a considerable amount of sugar; acetone was also present in large amount. At this time the patient was so weak that she could only walk short distances. The blood-sugar curve gave figures which were much higher than normal, as will be seen from the following results:—

CHART 2.



Sugar-tolerance curve in health (heavy line) and during starvation (interrupted line).

Blood-sugar .. 0·12 .. 0·15 .. 0·16 .. 0·18 .. 0·18 .. 0·16

From a consideration of the curve and the history of the case, together with the fact that the diet was very rigid, the view was taken that this was probably a case of renal glycosuria. The sequel proved this view to be correct. The patient was put on ordinary diet and soon became quite strong and fit. She put on flesh rapidly, and when examined three months later gave the following figures:—

Blood-sugar .. .. 0·12 .. 0·15 .. 0·13 .. 0·09

There was still, of course, considerable glycosuria, but the acetonuria had disappeared.

The contrast between the two results is very marked and indicates the extreme importance of considering the diet of the patient before coming to any definite conclusion. When the acetone present in the urine is dependent on lack of sufficient starch in the diet, or is due to starvation, it frequently happens that the *acetone disappears after sugar has been taken by mouth.* Thus in carrying out the sugar-tolerance test, the first specimen of urine passed may contain much acetone, while another specimen passed two or three hours after the ingestion of the glucose may be acetone-free. When this happens, the inference is that the acetonuria does not indicate diabetes, but is dependent on dietetic factors.

The sugar-tolerance curve is frequently affected in certain well-defined diseases other than diabetes. In some cases the tolerance for sugar is decreased, while in others it is markedly increased. The well-known effect of alcohol and other toxic substances in producing glycosuria is too well known to require discussion here, and the same may be said with regard to local sepsis giving rise to glycosuria. Disturbances of carbohydrate metabolism, apart from diabetes, are found chiefly in lesions of the endocrine glands.

PITUITARY GLAND.

In the fairly common condition affecting young people known as Fröhlich's disease, in which the patient tends to be excessively fat, the blood-sugar curve is often markedly affected. This condition is probably associated with a diminished activity of the gland—a hypopituitarism. In many such cases the curve tends to be more or less flat; the blood-sugar does not rise appreciably even after the ingestion of large amounts of sugar, and the storage mechanism in the liver is apparently exceedingly active. The curve obtained is very like that found after injection of insulin, and it is by no means improbable that the diminution in pituitary secretion results either in the production of larger amounts of insulin, or permits the insulin normally secreted to be more effective *in its action. The antagonism between pituitary* extract and insulin is well recognised, and it may well be that in this type of hypopituitarism, insulin action is more effective than it is normally. In this respect it is interesting to note that, not infrequently, diabetic children who receive insulin become exceedingly fat, and in some cases take on the appearance associated with Fröhlich's disease. In hyperpituitarism sugar tolerance tends to be lowered. Though, in the majority of cases of hypopituitarism, there appears to be an increase in sugar tolerance, yet in some cases the reverse is the case. On the whole, however, diminished secretion of the pituitary gland is associated with increased power to deal with sugar, while in hyperactive states of the gland carbohydrate metabolism is below the normal standard. The following figures, for which I am indebted to Dr. Gardiner-Hill, were obtained from a case of Fröhlich's disease and from a case of acromegaly :—

| | | | | | |
|---|---|---|---|---|---|
| Fröhlich's disease.. | 0·095 | 0·128 | 0·128 | 0·100 | 0·089 |
| •Acromegaly .. .. | 0·362 | 0·388 | 0·474 | 0·392 | 0·412 |

It is interesting to note that after treatment of hypopituitary cases with thyroid and pituitary extracts the blood-sugar curve tends to return to the normal.

### THYROID GLAND.

It is well known that Graves's disease is often associated with glycosuria, and in this disease sugar tolerance is not infrequently markedly diminished. It might be expected, on the other hand, that myxœdema would be associated with an increased sugar tolerance, but, as a matter of fact, the myxœdema curve is very frequently, though not always, a prolonged one, much on the same lines as that obtained in Graves's disease. The average curve, based on examination of a large number of patients, obtained in cases of Graves's disease is as follows. Two results from a case of myxœdema are also given; one represents the blood-sugar before treatment, while the other shows the effect of thyroid medication.

| | | | | | |
|---|---|---|---|---|---|
| Graves's disease average curve .. .. .. .. | 0·113 | 0·180 | 0·188 | 0·165 | 0·140 |
| Myxœdema .. .. .. | 0·100 | 0·193 | 0·181 | 0·182 | 0·180 |
| Same case after thyroid treatment .. .. .. | 0·100 | 0·135 | 0·130 | 0·113 | |

In cretins the sugar-tolerance curve may be low or high; here absorption probably plays an important part. The effect of one year's treatment of a cretin, aged 37, is well shown by the following figures :—

| | | | | |
|---|---|---|---|---|
| Before treatment.. .. | 0·095 | 0·167 | 0·232 | 0·241 |
| After " .. .. | 0·081 | 0·152 | 0·139 | 0·091 |

### EMACIATION AND INANITION.

In many cases of emaciation the sugar-tolerance curve gives a more or less flat line. Sometimes this emaciation is associated with some definite cause, but often no cause whatever can be found. The patient wastes away and gets steadily thinner and weaker, though all the organs appear to be quite sound. Generally, in such a case, various endocrine products are tried, but usually with negative results. There is little doubt that in such patients absorption from the intestine is at fault, and that the flat curve obtained after giving sugar is due to the fact that the sugar is not absorbed. Many of these cases do remarkably well on insulin. The administration of insulin seems to stimulate metabolism with the result that absorption from the intestine improves, and gradually a normal condition is established. In these patients, of course, insulin must be used *very cautiously* and in conjunction with sugar given by mouth. The doses, to begin with at any rate, should always be small. I have seen two patients who were steadily wasting away in spite of all treatment whose lives were apparently saved by stimulating the metabolism by means of insulin. The result of insulin treatment in one of these cases is shown by the following figures. The first line indicates the results of a tolerance test carried out before insulin treatment, while the second line gives the figures obtained after the patient had been on insulin for six weeks.

| | | | | | |
|---|---|---|---|---|---|
| Before insulin.. .. | 0·09 | 0·11 | 0·11 | 0·10 | 0·10 |
| After " .. .. | 0·11 | 0·14 | 0·16 | 0·11 | 0·09 |

This patient, though very emaciated to begin with, got on very well and regained her normal weight after insulin. In some of these cases cautious use of insulin seems to be the only method by which the patient can be helped.

### METABOLISM IN DIABETES.

Since the essential defect in diabetes appears to be a difficulty in burning up the food absorbed, it might be thought that metabolisn would be lower in a diabetic subject than it is in the normal individual. In other words, the natural assumption would be that the amount of heat produced by the diabetic body would be less than that evolved by the healthy body. Strange to say, this does not seem to be the case; the metabolism in the diabetic is just as marked as it is in the healthy individual. Though the diabetic has lost, to a large extent, the power to burn sugar and fat, yet he must be able to burn other substances (his own tissues) with remarkable intensity. Oxidation is apparently quite brisk in the diabetic patient. It is the power to oxidise certain specific substances that is lacking. It would seem as if the defect in the diabetic lies in failure to convert the sugar into some specific substance which is normally oxidised.

### OXIDATION OF FAT IN DIABETES AND ITS BEARING ON DIET.

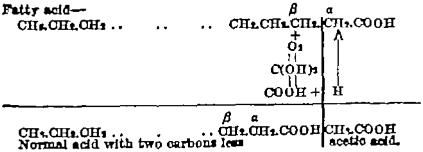
The oxidation of fat is markedly interfered with in diabetes with the result that acetone, diacetic acid, and oxybutyric acid—the so-called *ketone bodies*—appear in the urine. Since fat is a combination of fatty acid with glycerine, it is possible that the glycerine part of fat may act as a sugar in the body, though this is still disputed. The fatty acid is the important part as far as fat metabolism is concerned. In order to understand our present views on fat oxidation it will be necessary to consider very briefly the chemical structure of the fatty acids. All fatty acids consist of chains having the group COOH at one end and the group $CH_3$ at the other. The *simplest* of these acids contains these two groups only; it is therefore $CH_3.COOH$ or acetic acid. All the acids above acetic acid have $CH_2$ groups between the $CH_3$ and COOH. Thus, the 3 carbon acid—propionic acid—is represented by the formula $CH_3.CH_2.COOH$. For each additional carbon in the higher acids there is an extra $CH_2$ group. Now, the normal fatty acids in the body consist of very long chains containing 16 and 18 carbon atoms. They are palmitic and stearic acids. Palmitic acid, for instance, contains 14 $CH_2$ groups in addition to its $CH_3$ and COOH groups and would be represented as follows :—

$$CH_3.CH_2.CH_2.CH_2.CH_2.CH_2.CH_2.CH_2.$$
$$CH_2.CH_2.CH_2.CH_2.CH_2.CH_2.CH_2.COOH.$$

Now, though these chains are very long, the longest chain ever found as a disintegration product in the diabetic body contains only 4 carbon atoms—i.e., diacetic acid. No intermediate products between this 4 carbon acid and the normal 16 and 18 carbon acids have ever been found in the body. Obviously, therefore, the difficulty in diabetes is to deal with this lower fatty acid. The body can easily break down the long fatty acid chain until an acid with 4 carbon atoms is left, but apparently it cannot oxidise this comparatively simple product. The consequence is that 4 carbon acids appear in the urine in diabetes; these acids are diacetic and oxybutyric. Probably the first to appear is diacetic acid, and from this oxybutyric acid is formed. Certainly the acetone so often found comes from a breakdown of diacetic acid.

### HOW ARE THE FATTY ACIDS OXIDISED?

All the evidence at present available seems to support Knoop's theory of $\beta$ oxidation, or oxidation of the carbon atom second to the COOH group. In chemical language the C atom in the $CH_2$ group next the COOH group is called the $\alpha$ carbon, while the next is the $\beta$ carbon atom. Now, according to Knoop, oxidation of the fatty acid takes place at *the $\beta$ carbon atom. The result is that oxygen is* added on here, giving a COOH group and a free H which is in turn attached to the adjacent $\alpha$ carbon group as represented by the formula.


Fatty acid—
$CH_3.CH_2.CH_2$ .. .. .. $\overset{\beta}{C}H_2.CH_2.CH_2.\overset{\alpha}{C}H_2.COOH$
+
$O_2$
$C(OH)_2$
COOH +
H
$CH_3.CH_2.CH_2$ .. .. $\overset{\beta}{C}H_2.\overset{\alpha}{C}H_2.COOH$
Normal acid with two carbons less
$CH_3.COOH$
acetic acid.

According to this view it will be seen that every acid with an even number of carbon atoms has two carbon groups broken off as acetic acid. The part left is again oxidised in the same way, acetic acid being again formed, and an acid with two fewer carbon atoms left. This goes on until an acid with 4 carbon atoms is arrived at. In the normal body this acid is presumably broken down into two molecules of acetic acid, but the diabetic organism, for some obscure reason, fails to oxidise this 4 carbon acid, with the result that it appears in the urine. It is an extraordinary thing that the diabetic organism can oxidise *with ease all the long changed fatty acids* down to diacetic acid, but entirely fails when it has to deal with this comparatively simple product. If Knoop's view is correct, it is obvious that acetic acid must be very readily oxidised by the diabetic organism, since it does not appear to be excreted in the urine to any appreciable extent. Also, the theory demands that each molecule of fatty acid should furnish only one molecule of the 4 carbon acid. The evidence available seems to support this demand, but it is, nevertheless, uncertain whether, after all, the theory is correct. There is, however, no doubt that the diabetic organism has really lost, to a great extent, its power to deal with the lower 4 carbon acid, while it can apparently *break up the long chain* of palmitic and stearic acids without difficulty. The subject at present constitutes one of the most mysterious problems in biological chemistry. The general explanation given is that the oxidation of the final diacetic acid requires the oxidation of sugar as well. Since starvation will induce the presence of diacetic acid in the urine, it would seem that the old idea that fat can only burn in the "fire of carbohydrates" is based on some element of truth. Apparently, oxidation of fat can go on irrespective of sugar oxidation until diacetic acid or an acid containing 4 carbon atoms is reached, but this acid can only burn when sugar is burnt as well. This view is supported by some experiments of Shaffer, who showed that when sugar was acted on in vitro by hydrogen peroxide, the oxidation that took place resulted in the removal of diacetic acid if the latter was present in the solution. Starting from this test-tube experiment Shaffer carried out many observations on diabetic patients in an endeavour to establish some relationship between the amounts of sugar required to oxidise definite amounts of fat. As a result of this work he came to the conclusion that each molecule of fat required the presence of a molecule of sugar for complete oxidation. If, for the sake of simplicity, we take fat as represented by the chemical body stearic acid $C_{18}H_{36}O_2$, it required one molecule of sugar $C_6H_{12}O_6$ to oxidise this. Since the molecular weight of stearic acid is 284, and that of sugar 180, it follows that 180 parts by weight of sugar should completely oxidise 284 parts by weight of fat. In other words, in order to obtain complete oxidation of fat, the diet should not contain more than 284 parts of fat to 180 parts of sugar, or approximately 1·5 by weight of fat to 1 by weight of sugar.

As the result of this interesting work of Shaffer many investigators carried out experiments on diabetic patients, and in a general way confirmed Shaffer's view, though not all agree that it requires as much as *one molecule of sugar to burn one molecule of fat.* Thus Wilder and his colleagues, as the result of much work on the subject, put forward the view that one molecule of sugar oxidised two molecules of fat. This is now generally accepted more or less, and diets are made up so as to avoid having more than two molecular proportions of fat to one of glucose. This means that the diet should not contain more than three parts by weight of fat to one of glucose. Since oxidation of fat produces ketone bodies, and sugar tends to prevent their appearance in the urine, it is now customary to refer to ketone-producing substances as "ketogenic," and sugar as an "antiketogenic" substance. Most of the recent work *on this subject has been largely carried out in America,* and has certainly tended to emphasise the fact that it is necessary to preserve some definite relationship between the different constituents of the diabetic diet. On the other hand, it is quite uncertain whether there is really any definite molecular relationship between the oxidation of fat and sugar. Indeed, such very wide variations are found in different patients, that it is difficult to imagine that such a definite relationship really holds. It is not impossible that the absence of ketosis, where sufficient sugar is burnt, is largely due to a sparing action of the sugar on the fat. It must be remembered that the whole conception is still but a theory which from some points of view has, perhaps, obtained more importance than is justified by the facts. After all, it was known for many years that adjustment of the diet, particularly with regard to the relative amounts of fat and carbohydrate, was important in order to control acidosis. This was accomplished by a method of trial on the individual patient. In spite of the work that has been done, the only satisfactory method of adjusting diet in diabetes is to ascertain by trial what suits any particular patient best. The above principles are, however, very useful in helping us to arrive more quickly at the diet which will probably suit our patient best.

### INSULIN AND DIABETES.

So *far as the treatment of severe diabetes is concerned* insulin is always indicated, for in such cases diet is seldom successful. It is now generally acknowledged that insulin, when judiciously used, will control any case of uncomplicated diabetes, but the hopes that were sometimes expressed in the early days to the effect that insulin might ultimately cure diabetes have not been borne out by results. There is no evidence that insulin can cure diabetes, though in young growing children its use may result in a very considerable recovery of tolerance. In the adult some intitial increase of tolerance may take place during the earlier stages of insulin administration, but this is never very marked. One of the most important points to remember in regard to insulin is that its effect is considerably diminished when acute infection complicates the diabetes. When a diabetic patient who is on insulin treatment gets an infection of any kind, coma is very likely to intervene, unless the dose of insulin is materially increased. Neglect of this fact has resulted in many unnecessary deaths.

There are very few contra-indications to the use of insulin, but it should never be given if its use can *possibly be avoided in cardiac conditions with suggestions of angina pectoris.* In patients with ordinary valvular lesions insulin seems to cause no trouble, but several cases of sudden death after insulin injection have occurred in patients who had previously shown some evidence of anginal features, however slight. This danger is associated with the hypoglycæmia which to some slight degree is probably present at some time or other in every patient whose insulin dose is sufficient for his needs. With the exception of this variety of cardiac disease, I do not think there is any other contra-indication to the use of insulin in any case of diabetes.

### MODE OF ACTION OF INSULIN.

As already shown, sugar disappears from the blood as the result of oxidation or conversion into another substance—glycogen—in the tissues. Since the administration of insulin increases the rate at which sugar disappears from the organism, it might be expected that insulin either increases oxidation of sugar or results in the formation of more glycogen. In other words, that the administration of insulin simply increases the normal processes of carbohydrate metabolism. For the last few years a very considerable amount of work has been carried out with a view to ascertaining how insulin really acts, but so far little light has been thrown on the problem. Quite recently, however, Dale and his colleagues have shown that in the decerebrated eviscerated animal the use of insulin results in the disappearance of sugar from the circulating fluid, and that this decrease of sugar is proportional to the increase of glycogen *plus the sugar destroyed* by oxidation. It must be admitted that these experiments were carried out on animals under conditions far removed from the normal, but the results have gone further to show the manner in which insulin really acts than any work that has been so far published. Strange as it may seem, the isolation of insulin has thrown practically no light on the large subject of carbohydrate metabolism.

### REFERENCES.

Dale, H. H.: Proc. Roy. Soc., communicated April 29th, 1926.
Gardiner-Hill, H.: Quart. Jour. of Med., 1925, xviii., 309, 327.
Knoop: Beiträge f. Chem. Physiol. u. Pathol., 1905, vi., 150.
Kulcke, A.: Deutsch. Archiv f. Klin. Med., 1925, cxlviii., No. 324.
Shaffer: Jour. Biol. Chem., 1922, li., 33, and lii., 393.
Wilder, R. M.: Jour. Amer. Med. Assoc., Sept. 6th, 1924, 733.

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# NON-SPECIFIC PROTEIN INJECTIONS IN CHRONIC ARTHRITIS,

## WITH AN ANALYSIS OF FIFTY CASES.*

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THE treatment of arthritis by the injection of a foreign protein into the system has been practised for some years, many observers claiming that this treatment has an advantage over all others. A large number of preparations have been used, vaccines, colloidal metals, peptones, horse serum, and milk being the most commonly employed.

### *Résumé of the Literature.*

The treatment was first tried by Ichikawa in 1912, who, by the intravenous injection of an antityphoid vaccine in cases of typhoid fever, reduced his mortality in this disease from 30 to 11 per cent., and terminated the disease after the first or second injection. To Kraus, however, is due the discovery that the benefit was not produced by a specific reaction, for he found that he obtained similar results with a *B. coli* vaccine. The conception of the non-specific reaction dates, however, further back than that, for Jobling and Petersen [1] quote Mathes as having demonstrated in 1895 that the tuberculin reaction could be equally well produced if deutero-albumose were used. Between this date and 1912 there was no serious attempt to investigate the treatment of disease by a non-specific immunity response. Since 1912, however, it has been tried in most diseases, whether acute or chronic, and there is voluminous literature on the subject in America and Germany. In England the chief publications come from Gow and Auld, and in Scotland from Campbell.

Auld,[2] working with colloidal metals in cases of septic infection, found little or no benefit result until he used a preparation which he discovered later had been preserved with "veal peptone." In agreement with most other observers, he found that little benefit was effected unless a sharp febrile reaction was obtained. The veal peptone preparation gave this reaction, and he concluded that it was the peptone element which produced it. He considers, however, that the typhoid vaccine is a more effective agent.

Gow [3] confined his observations to acute diseases and summarised the type of case suitable for non-specific therapy as follows:—

1. Infective disease in which the causal organism is unknown or not certainly determined—e.g., rheumatic fever and acute toxic arthritis.
2. Infective disease in which the causal organism is known, but autogenous vaccine therapy is of little value—e.g., gonorrhœal arthritis.
3. Infective disease in which the causal organism is known and vaccine is given for both its specific and shock effect—e.g., typhoid, paratyphoid, and coliform infections of the urinary tract.
4. Chronic disorders of unknown ætiology—e.g., psoriasis,[4] pemphigus, and lupus erythematosus.[4]

He quotes a case of pyelonephritis which he treated by intravenous injections of an autogenous *B. coli* vaccine, and after four injections the urine remained free from *B. coli.* Using intravenous injections of specific organisms in acute disease—e.g., septicæmia, pneumonia, influenza, and cystitis—Gow [5] also found that the coliform bacilli were the only type that evoked a striking leucocytosis.

Other investigators soon turned their attention to the treatment of arthritis by this new remedy, and in 1916 Miller and Lusk [6] published the first series of treated cases. They used typhoid vaccine and preparations of proteose. In 10 cases of "acute articular rheumatism," after one injection of 150 millions of typhoid vaccine, three were cured, and the result was permanent. In the remaining seven it was necessary to give three to four daily injections before obtaining a permanent result. In a further six cases of subacute type of from three to nine months' duration, benefit was derived in all cases. They report the occurrence of relapses, especially in cases complicated by endocarditis or pericarditis. The results in cases of chronic gonorrhœal arthritis were striking, but were more resistant to treatment, one patient receiving 13 injections.

Smith [7] reported the injection of horse serum in cases of gonorrhœal arthritis, with very satisfactory results. He attributed the success to anaphylactic shock. Cecil [8] records the effect of this method of treatment in 40 cases of acute arthritis, made up as follows: rheumatic fever 26, acute toxic arthritis 7, gonorrhœal arthritis 7. Typhoid vaccine was used and the usual dose was between 40 and 80 millions. Three patients, by an error in technique, were given 400 to 500 millions with hardly any added severity in the reaction or difference in the therapeutic result. The average number of injections per patient was 1·8 in the fever cases, 1·5 in the toxic, and 5·5 in the gonorrhœal.

In the cases of rheumatic fever 40 per cent. completely recovered without the use of salicylates; the remaining 60 per cent. required salicylates to relieve the muscular pains which persisted. In only three cases was no benefit obtained. The cases of gonorrhœal arthritis received little benefit by the treatment. He concludes that the febrile response is the most important factor in producing relief of symptoms, and that salicylic acid is still the most effective drug in rheumatic fever, and that vaccines should only be employed after the failure of salicylates.

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Snyder and Ramirez,[9] in a series of 70 cases confined to the more obstinate cases of chronic arthritis, reported only 8·6 per cent. cures, and all in patients who had symptoms for less than two years. They used typhoid bacilli and secondary proteoses prepared from milk, and consider the secondary proteoses give as satisfactory clinical results and are less toxic and more pleasant for the patient. Snyder,[10] using stock typhoid vaccine, reports 60 per cent. cures in the acute cases by one injection, and 30 per cent. in from one to five injections, while 10 per cent. show no improvement. In the subacute cases—i.e., less than one year duration and with no ankylosis—25 per cent. showed considerable and 25 per cent. slight improvement. In the chronic cases of from one to ten years' duration there was merely a moderate increase in the mobility of the joints. Betz [11] reports on a series of 50 cases. The acute cases, as a rule, cleared up after the first injection, but some required three. Middleton [12] used *B. coli* or typhoid vaccine in ten cases, and states that in the early cases the disease was arrested, and in the chronic ones there was improvement in the general condition and relief of pain.

The most complete British record of the treatment of arthritis by this method that I can find is by Stockman and Campbell,[13] who report on 70 cases which they followed up for from 1 to 3½ years. Typhoid vaccine was used, and the dose varied from 125 to 200 millions. Detoxicated vaccine gave no beneficial results. In the series 58 derived immediate benefit and in 40 of these the benefit was permanent. Of the remainder 2 could not be traced and 16 relapsed. In some of the latter the injections were stopped early owing to rapid improvement. Of the 12 who did not improve, 4 were of very long standing though the disease was inactive; 1 gave only a slight reaction, 7 reacted well, but the infection remained active. Campbell considers that the maximum benefit is obtained in that type of case in which the disease starts in a more acute form with constitutional disturbance and a fairly rapid involvement of many joints. With an insidious onset of the disease and few joints affected at any one time, the patient generally retained some disability and was more liable to relapse.

On the continent less work has been published than in America, but mention should be made of a series of 600 cases by Paul [14] who administered vaccine by scarification. Attention was drawn to this work in THE LANCET [15] with the suggestion that as the claims are very large—65 per cent. cured and 95 per cent. improved—the treatment should be investigated "by those who are dissatisfied with their own results in the big group of fibrositic maladies." On the continent the chief preparations used for this purpose are sterilised milk, peptone, and, in Germany, an extract of cartilage prepared according to the instruction of Heilner [16] called "Sanarthrit."

Nolf[17] concludes that intravenous injections of peptone made salicylate treatment more efficacious in certain obstinate cases of rheumatic polyarthritis, and enhanced its value in the treatment of a group of acute arthritic cases which had hitherto proved refractory. He stresses the importance that care should be exercised in giving the peptone, that the quality should be of the best and prepared under aseptic conditions. He advises the injection of adrenalin to prevent as far as possible the "shock" effects of the peptone injection.

*Theories of Non-specific Therapy.*

Many theories have been advanced to place this somewhat empirical treatment on a scientific basis, but space forbids me to go into them in detail. To those, however, who are interested I would commend a book on "Protein Therapy and Non-Specific Resistance," by W. F. Peterson. He considers that the organism is stimulated to greater production of either specific substances, antibacterial in character, or that the general resistance to intoxication is increased. Perhaps the most reasoned and feasible theory is that advanced by Herrmann,[18] who concludes that the injection of foreign proteins serves as a stimulus for the liberation of specific antibodies in animals in which previously injected antigen was unable to do so. This theory was recently investigated by Ling,[19] who injected various foreign proteins into normal human beings. He found that serum antibodies including bacteriolysins for *Bacillus typhosus* and *Staphylococcus aureus* were "shed" into the circulation within 24 hours by the injection of foreign proteins. He found that the most effective agents to produce this as well as the reactive leucocytosis were the bacterial proteins, typhoid vaccine, and market milk—the latter being better than Certified Milk which contained less total organisms.

It has also been found that antibodies which have gradually disappeared after an infection or following immunisation artificially produced, again returned to the serum after any procedure that increased the body temperature, whether by increasing the external temperature, by influencing the thermal centre of the brain, or by injecting pyrogenic drugs. This tends to show that hyperthermia has a direct stimulating effect on the previously formed antibodies.

*Records of Fifty Cases.*

My own series consists of 50 cases treated at the Royal Bath Hospital, Harrogate. I have purposely excluded private cases so that the type of case, the diet, and the treatment might be as far as possible uniform. Of the 50 cases, 18 were men and 32 women, their ages varying from 19 to 66 years, the average being 40. There was no outstanding occupational cause for the arthritis. Of the men, 5 were miners and 4 clerks, and of the women 10 were married. As to the locality, 23 came from the West Riding of Yorkshire, and of these 9 came from Leeds. Durham produced 9 and the remainder came from different localities scattered over England and Scotland.

In common with other observers I found it difficult to classify the cases. I have used, as far as possible, the classification detailed by Pringle and Miller in THE LANCET.[20] All the cases were polyarticular and of the subacute or chronic type. The average duration of the disease for the series was three years; the shortest was two months, following an attack of influenza, and the longest 20 years.

| | |
|---|---|
| Infective— | |
| (*a*) Associated with septic focus .. .. | 41 |
| (*b*) Unknown origin .. .. .. .. | 1 |
| (*c*) Associated with zymotic disease .. .. | 2 |
| Metabolic .. .. .. .. .. .. | 5 |
| Periarticular fibrositis .. .. .. .. | 1 |
| | 50 |

In each case I used the typhoid paratyphoid vaccine prepared in the laboratories of St. Mary's Hospital and retailed by Messrs. Parke, Davis and Co. This vaccine is made up in the approximate proportions of 2 parts of *B. typhosus* to 1 part each of *B. paratyphosus* A and B.

*Technique*.—I use a 10 c.cm. Record syringe with a needle of medium bore, and, after drawing up the required dosage of vaccine, dilute this with normal saline solution to 5 c.cm. A suitable vein in the antecubital fossa is chosen, and the injection given slowly.

*Dosage*.—In hospital practice I usually start with a dose of 100 million total organisms and increase each subsequent dose by 100 millions, as each injection establishes a certain amount of tolerance. In private practice, however, I find it best to start with 50 millions, for the reaction to 100 millions in private patients is often severe and prolonged, lasting two days and, in some cases, even three days. I am unable to give any explanation for this. Cecil[8] recommends 30 to 100 millions, Campbell[13] 125 to 200 millions. Miller and Lusk[5] gave 150 millions and then reduced the dose to 75 millions. Cowie[21] seldom gives a dose less than 600 millions, and has given this dose in children with no untoward result. He, however, considers a good average to be 100 millions with a maximum of 500 millions.

*Frequency of Injections.*—In the majority of cases I allow four days to elapse between the injections. In the more chronic cases this allows the patient to recover from the reaction, enjoy the improvement in his condition, and enables him to face the ordeal of the next injection. In America the injections are frequently given daily, but those cases were acute rheumatic fever, and one or two injections sufficed to cure the condition. Cowie [22] points out that as there is no negative phase as far as the antibody content of the blood is concerned he sees no reason why injections should not be given daily. However, as the reaction is so great, he advises that it is best to allow a day to intervene.

### *Anaphylaxis.*

I see no reason to fear any anaphylactic reaction, for in one of my cases a second course was started within six months of the first; in another two within nine months, and in a case in private I gave the doses at monthly intervals. In no case was there any resemblance to an anaphylactic reaction. Gow,[5] however, advises an intradermal test to see if the patient is sensitised.

### *Reaction.*

Within a short time of the injection a feeling of chill starts which usually progresses to a shivering attack, and in most cases becomes a true rigor. This takes place any time from a quarter to one and a half hours after the injection. A period of warmth supervenes and the temperature begins to rise, usually reaching its maximum about four hours after the injection. The highest temperature recorded in my series was 104·2° F. Cecil [8] has recorded a temperature of 107°, which is the highest on record. As I pointed out before, it is impossible to predict what the temperature will do at the first injection. It may not reach its maximum for 12 hours, and in these cases it may be 36 to 48 hours before it eventually returns to normal. When the temperature is going up the patient feels acutely miserable; there may be nausea to the point of vomiting, headache, backache, and generalised pains in all the affected joints. Even joints which have been quiescent for some time may show signs of renewed activity. When the maximum is reached the temperature gradually falls, and with the fall in temperature is associated profuse perspiration. I think this perspiration is an important factor, for I notice that the patients who derive the greatest benefit have the most profuse perspiration. With the fall in temperature all the unpleasant sensations are replaced by a delightful feeling of euphoria. The swelling of joints subsides, pains disappear, and joints which were previously locked can be moved painlessly and freely. This stage lasts from 24 to 48 hours, and then the pains gradually begin to return, but never to the same extent, and each injection causes the return of symptoms to be less marked. After each injection the temperature returns to normal within 24 hours. Next day the patient is able to have 40 minutes general massage and get up after it.

### *White Cell Count.*

White cell counts were done on each patient during the first and last reactions as a routine. These findings corroborate those of other observers—namely, that there is a leucopenia corresponding to the rigor, then a sharp leucocytosis following the rise of temperature, and a return to the previous level, or, in some cases, below it in 24 to 48 hours. A differential count shows an absolute decrease in the polymorphonuclear neutrophiles during the leucopenia, followed by a large increase, and a relative and absolute decrease in the lymphocytes. Very high figures are recorded for the leucocytosis. Campbell [13] mentions 40,000 as the maximum in his series. Miller and Lusk [4] state that a count of 52,000 occurs in acute arthritis and 25,000 in the subacute cases. The highest count recorded in my series was 27,000, which occurred five hours after the injection.

### *Blood Pressure.*

Petersen quotes Scully as recording a slight increase in the blood pressure during the chill, then a decline of 10–25 mm. Hg for six to eight hours, returning to normal in 24 hours. One or two cases developed herpes.

### *Dangers and Contra-indications.*

In America deaths have been recorded on account of the size of the dose given, but Snyder and Ramirez [9] state that these cases were so ill they ought to have been considered as not suitable. Petersen states that delirium is set up in cases of typhoid, typhus, and erysipelas, and delirium tremens in alcoholics. Two of my cases became rather excited and confused for a short time on two occasions, but they did not cause any anxiety and completed their course of injections without any further complications. There were no other complications in any of the patients. Campbell [13] reports a case of hæmaturia in one case in a patient who had albuminuria prior to the injection. It should be remembered that the vaccine is suspended in a solution of dilute carbolic acid and it may have been the acid which caused the hæmaturia. Two of my cases had albuminuria before the injections, and they did not develop hæmaturia or any symptoms referable to the kidneys. Snyder [10] reports five cases of "gastric hæmorrhage" and eventually these cases showed the best results. He also does not consider a high blood pressure or heart disease well-compensated contra-indications. I agree with him in this, for one of my patients had a systolic blood pressure of 190 mm. Hg and gave a very good result, and another case with a well-compensated lesion of the mitral valve showed no ill-effects and did well. Petersen reports that in an old tuberculous or syphilitic lesion the reaction is liable to cause a flare up of symptoms.

### *Balneological Treatment in Association with Injections.*

All my cases had balneological treatment in the interval between the injections. Every day, except the day of the injection and occasionally the next day, they had a pint of strong sulphur water before breakfast and half a pint of magnesia water at 11 A.M. On the day the temperature was normal—usually the day following the injection—they had 40 minutes dry general massage. Special attention was given to the joints which were stiff or showed fibrous ankylosis, and attempts were made to break down adhesions during this stage. For the following three days local treatment, such as paraffin wax, radiant heat, and Berthollet followed in some cases by ionisation, were given to the joints most severely affected.

A natural question to ask is how do these results compare with those in which no injections have been given? Unfortunately, a definite statistical answer cannot be given; we do not possess a registrar or house physician at the hospital, and the honorary staff has as yet been unable to do a detailed "follow up" of all cases. I hope that this omission will be rectified at an early date.

### *Results.*

Of the 50 cases, after an average stay of four weeks in the hospital, 44 were discharged as definitely improved, and 6 as no worse but no better. I have sent to each patient a long questionnaire which has been answered in all cases. This shows that 34 have maintained their improvement and in some cases advanced to a definite cure. The longest period since discharge is one and a half years and the shortest four weeks. Of the 44 who were discharged improved, 12 have not improved, 5 having become worse than when they left hospital, and 7 remaining as they were on discharge. Of the 6 who were discharged in statu quo, 2 have improved and speak of themselves as cured, 3 have become worse than when they left hospital, and 1 has remained in the state in which she was on discharge—i.e., 8 are worse than they were on discharge and 8 are in statu quo. A few details about these 16 cases are of interest. Taking, first of all, the 8 who are worse, 4 of them had a definite focus of sepsis which has not been removed; 2 of them have a condition of achlorhydria, in one amounting to a true achylia. One was given only two injections, and as there was no clinical improvement they were stopped. One remained well for eight months and then relapsed, and writes that he feels a further course would cure him. Of the 8 who remained in statu quo, 3 had a focus of infection which has not been removed. Two were of the menopause type. One had only two injections and another only three, owing to no clinical improvement. One improved for six months and then relapsed. In my questionnaire I asked if there was a relapse for a short time after leaving hospital, and the answer was in the affirmative in 20 cases. Of these, 17 recovered from the relapse and improved.

### *Clinical Records.*

CASE 1.—R. S., No. 35. Admitted April 9th, 1925. Single woman aged 30. Teacher of music (piano). History: In February, 1925, had an attack of influenza, and one month after recovery started with pain and swelling in right foot. This quickly spread till all joints became painful and swollen. Influenza six years previously, otherwise no other illnesses.

*Condition on Admission.*—The left elbow and shoulder and the right foot were painful and stiff. There was much swelling of both wrists and these joints were hot. Most of the interphalangeal joints were involved, so that she was unable to play the piano. A routine examination revealed no focus of infection. Intravenous injections were commenced on April 10th, 1925, and given every fifth day for five injections. I started with 100 million total organisms and increased the dose by 100 millions each time. Each injection except the last was followed by a rigor, the temperature went sharply up, the highest recorded being 103·4° F. This was followed by a most profuse perspiration and the improvement in the joint condition was dramatic, for the day after the first injection the inflammation and swelling had disappeared. She was discharged on May 6th, 1925, having gained 1¼ lb. in weight, feeling very well, with free and painless movements of all joints, and able to play the piano. She writes (February, 1926) that she still keeps free from symptoms and has been working since discharge.

CASE 2.—E. M., No. 47. Admitted May 28th, 1925. Married woman aged 25. No children. History: At the age of 15 started with pain and swelling of fingers. Gradually spread to knees, ankles, wrists, and shoulders. Was treated at Buxton, but gradually got worse. Tonsils removed 1923 and improved after this, but had a bad relapse after an attack of influenza in March, 1925. No previous illness. Periods regular.

*Condition on Admission.*—Well nourished; pale; tongue furred; bowels open with medicine; teeth sound; throat clean; heart, no disease. Joints: Fibrous ankylosis and swelling both wrists with only very slight movement. Creaking both shoulders and right elbow. Creaking and pain in both knees. Creaking in both ankles.

*Laboratory Reports.*—Fæces: Strept. non-hæm., *Strept. fæcalis* (c), *B. coli* (in order of predominance). Urine: *Staph. albus*, scant growth. No other abnormalities.

*Treatment.*—One pint sulphur water and ½ pint magnesia water daily. Berthollet steam bath to arms and legs. Five intravenous injections of T.A.B., starting with 100 millions and working up to 500 millions. On discharge, June 24th, 1925, there was a marked improvement in the general health. The knees were free from pain with only slight creaking. There was no pain or swelling of the wrists, and more movement in the left wrist. An autogenous vaccine was prepared from the culture of the fæces and mixed with stock strains. She was given weekly injections of this for seven months. She had a slight relapse after leaving the hospital, but soon picked up, and rapidly lost all symptoms, except in the wrists, which still remained very stiff. She was readmitted Jan. 28th, 1926, with a view to further injections to see if the wrists could be made freely movable. Treatment as before except that paraffin wax baths to the hands were substituted for the Berthollet. Five intravenous injections of T.A.B. were again given. This case is interesting as corroborating the findings of Pringle and Miller[10] in their paper on the glucose tolerance curve. At the commencement of treatment there was an appreciable intolerance to carbohydrates and, at the end, though the "Lag" element was still present, there was marked improvement.

On discharge on Feb. 24th, 1926, the general health was again much improved, and the wrist movements were definitely improved, and no other joints showed symptoms. After discharge there was a slight relapse as the knees which had been quiescent for seven months became swollen again, but by March 9th she had quite recovered, and the wrists were still more flexible.

Since this paper was written this patient has steadily improved, and except for slight limitation of movement at the wrist, has no symptoms of a "rheumatic" character.

This case shows how the disease tends to continue even though all sources of infection have been dealt with as far as possible.

CASE 3.—A. W., No. 46. Single woman aged 36. School teacher. Admitted July 30th, 1925.

*History.*—Started in 1918 with pains in hands, which quickly spread to most joints. She had an extensive treatment in Buxton and again in Harrogate in 1923. She improved slightly after each, but relapsed again in February, 1924, and then had a prolonged course of electrical treatment, but became much worse again in March, 1925. She had kept at her work with long periods of sick leave till this last attack, which finally incapacitated her.

*Condition on Admission.*—General condition, fair; tongue furred; bowels constipated; teeth sound; throat clean. Joints: Fibrous ankylosis with only very slight movement both wrists, and great swelling of all metacarpo-phalangeal joints both hands. Creaking both knees. Pain on shoulder movements both sides.

*Laboratory Reports.*—Fæces: *Strept. fæcalis* (a), *B. coli*. Urine: *Staph. albus*.

*Treatment.*—1 pint sulphur water and ½ pint magnesia water daily. Berthollet steam bath to legs. Paraffin wax to hands. Radiant heat to shoulders. Five intravenous injections of T.A.B. were given, starting with 100 millions and working up to 500 millions.

*Result.*—After the first injection the swelling round the joints was much less, but there was no relief from pain. After the third injection all the joint movements were free and painless. A letter received a month after her departure states: "I feel I have got a new lease of life. I have worked at top pressure every day since discharge." This has been maintained to date.

This was a most intractable case of a steadily progressing infective process which advanced in spite of all treatment until the injections were given.

CASE 4.—T. G. B., No. 15. Married man aged 50. Occupation, a grocer. Admitted May 22nd, 1924. Weight (dressed), 9 st. 1½ lb.

*History.*—Pains started suddenly in right wrist in December, 1923, then went to ankle and finally to most joints. He was in bed three weeks.

*Condition on Admission.*—General condition very poor, practically helpless, wasted, and pale. Tongue furred. Bowels open regularly. Teeth, one remaining; rest have been recently extracted—not more than two at a time—for gross sepsis. Pulse 138. No bruit. Apex beat, normal site. Joints: Creaking both shoulders with limited movement in left. Left knee hot and greatly swollen; creaking and pain on movement. Both ankles hot and painful. Man could only get about in a wheeled chair, and could hardly do anything for himself.

*Laboratory Reports.*—Fæces: *Strept. fæcalis* (a), *B. coli*, *Strept. viridans* (in order of predominance). Urine: Sterile. Test-meal: Achlorhydria with small secretion of HCl in stomach. Very rapid emptying.

*Treatment.*—1 pint of strong sulphur water and ½ pint magnesia water daily. Berthollet steam bath to both knees and ionisation to left knee and both ankles. Acid. hyd. dil. 1 drachm three times a day with meals. Seven injections of vaccine prepared from stools and mixed with stock strains. Ran a septic type of temperature during the whole of his time in hospital.

*Result.*—Weight 9 st. 4¼ lb., increase 2¾ lb. Still very helpless—unable to walk. General condition improved.

Readmitted: Oct. 9th, 1924. Weight, 8 st. 8¼ lb., loss of 10 lb.

*Condition on Admission.*—General condition showed a slight improvement. He did not look so toxic, but his joints were worse and he was still helpless. Joints: Creaking and limitation of movement left shoulder. Both knees are now hot and swollen, and there is pain and creaking on movement with much limitation of range. Pain and limitation of movement right ankle, and creaking and swelling of left ankle.

*Laboratory Reports.*—Fæces: *Strept. fæcalis* (a), *B. coli*. Urine: Sterile, *Strept. fæcalis* (c) (in order of predominance). Test-meal: Achlorhydria. Normal chloride curve. Neutralisation effect. Blood count: Simple anæmia, moderate degree.

*Treatment.*—1 pint strong sulphur water and ½ pint magnesia water daily. Berthollet and ionisation to knees. Acid. hyd. dil. 1 drachm as before. Seven intravenous injections of T.A.B. vaccine, starting Oct. 13th, 1924, with 100 millions and working up to 500 millions. There was a sharp reaction after each injection, usually accompanied by a rigor.

*Result.*—Discharged Nov. 19th, 1924. Weight 8 st. 12¼ lb., increase of 4 lb. From being helpless and requiring to be wheeled about in a chair, he got on to crutches, and, on leaving, could get about with the help of two sticks. His temperature, which was raised on admission, continued until after the fourth injection, after which it remained normal except during the reactions after the other three injections. He writes (February, 1926): "I am pleased to tell you I am practically myself again. I can follow my work quite nicely."

Space has not allowed me to give the cases in full detail, but I think the abridged details are clear enough to demonstrate the valuable aid these injections give in the treatment of arthritis.

### *Summary.*

1. In the intravenous injection of T.A.B. vaccine we have a therapeutic agent which is capable of producing improvement in a short space of time in between 80 and 90 per cent. of all types of arthritis, and this improvement is maintained in between 50 and 60 per cent.

2. The types which respond best are the acute and subacute where the disease is confined to the peri-articular tissues—in these cases permanent benefit is assured in over 90 per cent. of the cases. Where the joints themselves are affected definite improvement occurs with arrest of the disease, but naturally bony changes cannot be altered.

3. If all possible foci of infection have not been removed the injections do not arrest the disease and the patient will relapse.

4. Though the reactions are severe the contra-indications are few—disease of the myocardium, gross kidney disease, chronic alcoholism, tuberculosis and syphilis being the chief.

5. The most desirable reaction is that in which there is a rigor, sharp rise of temperature, quick fall, and profuse perspiration, and dosage should be regulated to produce this.

6. In view of the proved ability of these injections to cut short an attack of rheumatic fever, I would plead for an extended trial of this treatment in the hope that much invalidity from heart disease might be prevented.

7. The cases which do not do well are those of the menopause group of the chronic villous type, and those showing *achylia.*

In conclusion, I should like to express my sincere thanks to my colleagues on the staff of the hospital for their encouragement and advice, to Mr. S. Linfoot, who did all the white cell counts, and to the nursing staff, who so willingly undertook the extra nursing entailed.

### *References.*

1. Jobling and Peterson: Jour. Amer. Med. Assoc., June 3rd, 1916, p. 1753.
2. Auld, A. G.: Brit. Med. Jour., 1918, i., 195.
3. Gow, A. E.: St. Bart.'s Hospital Journal, 1919, p. 75.
4. Engman and McGarry: Jour. Amer. Med. Assoc., Dec. 9th, 1916, p. 1741.
5. Gow, A. E.: Quart. Jour. of Medicine, October, 1919.
6. Miller and Lusk: Jour. Amer. Med. Assoc., June 3rd, 1916, p. 1756.
7. Smith, Louis D.: Jour. Amer. Med. Assoc., June 3rd, 1916, p. 1758.
8. Cecil, R. L.: Arch. Int. Med., 1917, No. 6, xx., 951.
9. Snyder and Ramirez: Arch. Int. Med., No. 50, xxviii., July, 1921.
10. Snyder, R. G.: Arch. Int. Med., August, 1918, No. 2, xxii., 224.
11. Betz, I.: Medical Record, 1921, xcix., 920.
12. Middleton, J. C.: Glasgow Med. Jour., 1923, c., 124–134.
13. Stockman, R., and Campbell, D.: Glasgow Med. Jour., 1925, ciii., 73.
14. Paul, G.: Wiener klin. Wochen., Sept. 3rd, 1925, p. 984.
15. THE LANCET, 1925, ii., 711.
16. Hellner: Münch. med. Wochen., 1917, No. 29.
17. Nolf, P.: La Presse Médicale, Paris, 1918, xxvi., 484.
18. Herrmann, S. F.: Jour. of Infectious Diseases, November, 1918, xxiii., 467.
19. Ling, C. Y.: Arch. Int. Med., No. 5, xxxv., 598–608, and No. 6, p. 740–752.
20. Pringle and Miller: THE LANCET, 1923, i., 171.
21. Cowie, D. M.: New York State Jour. Med., November, 1921, xxi., 395.
22. Cowie, D. M.: Jour. Amer. Med. Assoc., Jan. 29th, 1921, p. 310.

# THE PATHOLOGICAL ACTION OF LIGHT UPON THE EYE.

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## PART II.* (*continued*).—ACTION UPON THE LENS: THEORY OF THE GENESIS OF CATARACT.

### 4. *The Experimental Production of Cataract.*

(1) *Long Wave-lengths.*—Cataract due to electrical oscillation has been produced in animals by Hess (1888) and Kiribuchi (1900), using the discharge from a Leyden jar. The electric effect is very probably complicated by concussion effects, whose influence in the coagulation of proteins has already been referred to (mechanical shock and agitation).

(2) *Infra-red Waves.*—Isolated heat rays readily produce a lenticular opacity, a result which has been obtained by several experimenters—Richen (1913), Vogt (1918), Grinella (1924), Muller (1924), Kranz (1925). Using concentrated light from a carbon arc the writer, in conjunction with Leonard Hill, has produced an opaque disc-like opacity on the anterior surface of the lens in five minutes in rabbits; with less intense exposures a diffuse opacity occurs throughout the lens; with still less a posterior opacity develops after some days.

(3) *Visible Rays.*—Opacity has been produced by visible light (concentrated sunlight with the infra-red and ultra-violet excluded) by Werneck (1834), Czerny (1867), Deutschmann (1882), Langenbeck (1903), and Herzog (1904).

(4) *Ultra-violet Rays.*—Under experimental conditions opacity is difficult to obtain owing to the difficulty of getting a sufficient amount of short-waved radiation through the anterior eye; further, the lens proteins appear to be more stable under these radiations than most others. Several observers have, therefore, reported negative results. Using intense radiation, it has, however, been produced by Widmark (1898) to a marked degree, and by Verhoeff and Bell (1916) to a slight degree. The latter observers, moreover, showed that when a lens thus exposed remained clinically transparent, on keeping it for 48 hours in normal saline a definite haze developed confined to the pupillary area. The isolated lens also, on exposure to ultra-violet, if suspended in physiological saline, turns similarly opaque (Chalupecky, 1913; Soret, 1893), an observation confirmed by the writer; the opacity is a faint hazy one, which, on keeping in saline, develops much more intensely than unradiated controls. While complete precipitation is thus obtained only with difficulty, the work of Burge (1916) and Adams (1925) already mentioned shows that the first stages of the process are readily inaugurated. The most innocuous spectral region would appear to be the border-line between the visibles and the ultra-violet (Trümpy, 1925), since here both thermic and abiotic effects are at a minimum.

(5) *Short Wave-lengths.*—Radium has been found to produce cataract experimentally in animals (*Birch-Hirschfeld, 1904–08; Alphonse, 1909*), in the fœtus in utero (Hippel, 1907), and clinically in man (Salus, 1925; Ascher, 1925; and others); while X rays have the same action, as has been demonstrated by experiment in animals (Birch-Hirschfeld, 1904; Tribondeau and Belley, 1907), in the fœtus (Stock, 1907; Herzan, 1907), and has been reported as occurring clinically after intensive therapeutic doses (Paton, 1909; Williams, 1920, and others).

(6) *Sensitisers.*—Sensitisers act in vivo in the same way as they do in a photographic plate; they so modify the substance with which they become

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* Part III. will appear in a subsequent issue of THE LANCET.

associated that it reacts photochemically to long wave-lengths which ordinarily would produce an inappreciable effect. Thus when an animal is injected with hæmatoporphyrin visible rays produce the same effects as ultra-violet, and, while remaining normal if kept in the dark, if it is placed in sunlight the animal dies in a few hours. Howell (1924) has recorded the formation of cataract in animals so sensitised and exposed to daylight. Apparently, therefore, lenticular opacity can be formed by the action of visible light on sensitised protein. If this finding is substantiated it forms a powerful argument in favour of the possibility of the occurrence of the same reaction, though more slowly, by ultra-violet light. It is indeed possible that a process of continuous photosensitisation may play a part in the production of cataract clinically.

(7) *Salt Concentration and Osmosis.*—Heubel showed (1880) that the injection of hypotonic solutions into the eye made the lens opaque, and that similar intravenous injections produced a like result; further, in frogs, if the injection be pushed rapidly, that the lens remains clear, then, if the animal is immersed in water, opacity quickly develops. It therefore appears to occur on osmotic dilution, and not on concentration—an inflow of water into the lens. The opposite process of concentration of the aqueous, which was the original theory of the ætiology of cataract advanced by Panas (1894) and accepted by Leber (1903), is unrealisable in effective degree in vivo.

### 6. *The Clinical Occurrence of Cataract.*

(1) *Cataract due to Electricity; Electric Cataract; Lightning Cataract.*—It has long been recognised that cataract can readily follow the actual passage of an electric current through or near the eye. The photophthalmic symptoms and the heat effects on the surface which follow exposure to the short-circuiting of a high-tension current, or a lightning flash, have been dealt with in the previous article, but although the infra-red and ultra-violet rays are present in quantity, it is beyond doubt that the formation of cataract is largely due to electro-chemical action, to which must be added concussion effects.

(2) *Cataract due (probably largely) to Heat; Occupational Cataract.*—Wenzel (1808) was the first to note that "les personnes, qui approchent beaucoup le feu, éprouvent un desséchement et une opacité de la cristalline." Since then a very large amount of speculation has centred round the fact that in certain industries where the workmen are exposed to high degrees of heat the occurrence of cataract has been found to be prevalent. Meyhofer (1888) first directed attention to this in glass-blowers, and, although some have questioned it, its prevalence and its right to be considered as an occupational disease was established by Leggo in a Home Office report (1907). While by no means always so, the lesion is usually a typical well-defined disc-like opacity situated in the posterior pole of the lens (Parsons, 1913). A somewhat similar condition has been noted in iron-workers (Crilland, 1913), tin-workers (Healy, 1921), chain-workers (Roberts, 1921), and gold-smelters (Brinton, 1913).

The emission spectrum from molten glass was examined by Crookes (1914), who found that in the ultra-violet it extended down only to 3310 A.U. on prolonged exposures, while the rays in the short infra-red were extremely powerful; he therefore concluded that the ultra-violet were to be exonerated and that the condition was due to heat waves. Schanz and Stockhausen (1910), however, found that, although the spectrum did not extend far into the ultra-violet, yet the short waves were present in high intensity; probably the spectrum varies with the metals used. Moreover, when we consider that the lens absorbs rays up to 4000, that the exposure lasts with intermissions for years, and that the worker, bending over a tank, looks at a source of maximum extensity involving a high energy concentration in the lens, it would seem unsafe to conclude that the mischief is entirely due to the infra-red. Further, the fact that workers in some of the other trades mentioned where ultra-violet is absent seem to be affected less *frequently* points to the probability that while heat is apparently the main factor, the long ultra-violet may also have a not inconsiderable effect. The theory at present generally accepted is that suggested by Parsons (1913) and supported by Hartridge and Hill (1910), that the main factor in the ætiology is malnutrition or irregularly varying nutrition due to changes in the composition of the aqueous or to the liberation of toxins by the action of heat waves falling on the iris and ciliary body. The cataract is, therefore, either a complicated cataract consequent on a chronic, mild inflammation of the ciliary body, or a degenerative change induced by periodic variations in the nutrition of the lens. The only evidence of such a mild iridic involvement that has ever been brought forward is the demonstration of hæmolysins in the aqueous after raying, which, according to Römer (1903), occurs only in iritis and after paracentesis. Römer's statement is, however, wrong, for more recent and refined methods have demonstrated the presence of hæmolysins in the normal aqueous of highly immunised animals in small amounts. The action of heat rays is non-specific; in the present case, as always, the initial action is to dilate the capillaries, its subsequent action to induce congestion, stasis, hæmorrhages, and perivascular leucocytic infiltration; there is no evidence of a specific iritis, and no toxin will presumably be liberated until, as in other parts of the body, the lesion is pushed to the extremity of an actual burn involving tissue destruction—an unlikely event under the circumstances, even allowing for the absorption by the pigment. When the capillaries are dilated their permeability is increased, and substances of colloid aggregation are allowed through their walls in larger quantity than normally. Thus albumin, globulin, and fibrin appear in the aqueous, which may, therefore, coagulate and give the appearance of a fibrinous exudate. Hæmolysin is, or behaves as if it were, a colloid (Bechold, 1907; Eisler, 1923), related to, or associated with, globulin (Homer, 1920; Ruppell, 1923); its presence in the aqueous in quantity is merely an index of capillary dilatation by any agency whatever. Clinically, there is no evidence of any pathological change in the iris of the men affected. The fact that the opacity is a posterior polar one has been cited as analogous to a complicated cataract following a chronic cyclitis; its occurrence here can amply be accounted for by the concentration of radiant energy by refraction through the cornea and the lens, by reflection from the posterior surface of the lens, by the absence of convection currents in this region, and by the large accumulation of radiant energy here when emitted from a source subtending a large solid angle. In any case, the comparison is an extremely superficial one depending merely upon site, for the intimate structure of glass-blowers' cataract as revealed by the slit-lamp is widely different from that of complicated cataract (Schnyder, 1920).

A toxic origin being unlikely, we are left with a physiological change: malnutrition due to changes in the aqueous. A considerable amount of recent evidence and as yet unpublished and uncompleted researches by the writer are tending to show that in all probability the aqueous is within biological limits a dialysate of the blood-serum, virtually stagnant, with only a minimal circulation due to transudation and osmosis through the capillaries, and to pressure changes induced by muscle movements. Apart from its being highly oxygenated, it probably plays the part only of a vehicle in the nutrition of the lens, whose metabolism is presumably regulated in very large measure by the efficiency of its own autoxidation system. If this is the case, the only change that capillary dilatation will bring about will be the alteration of its colloid-crystalloid content in accordance with the requirements of a Donnan's equilibrium—i.e., an increase in the colloid content and a decrease in the crystalloids, with a total very slight increase in osmotic pressure. This will have a minimal effect on the nutrition of the lens, and any effect the small osmotic variation will have on the fluid traffic of the latter will be a tendency for water to flow out of it, an effect the reverse of that required to induce opacity.

In contradistinction to this, cataract is readily produced by heat; the short time interval we have seen from a consideration of the chemistry of the changes is no objection to the two conditions being similar in nature, while it throws out of court any indirect action through the ciliary body. This is further emphasised by the fact that opacity can be produced in the same way in albino rabbits (Vogt, 1925) where there is no pigment in the iris to absorb large quantities of heat. Further, in Italian glass-workers, who work very near to the furnace, corneal opacity is common (Critchett, 1913); it seems only reasonable to attribute the same effect to the same cause, and this is obviously the direct result of the incident radiant energy. The fact that the cornea does not always turn opaque before or with the lens is explained by the greater concentration of energy in the latter when the radiating source subtends a large solid angle; in the case of a small source, as is used experimentally, it frequently does become opaque first. Further, physiological repair of submaximal damage is much less evident in the lens, and the cornea is more able to cope successfully with a noxious agent acting over a long period of time. At the same time, however, while the direct action of the incident energy upon the lens itself probably is the fundamental factor in the ætiology, the other is almost certainly of importance secondarily in bringing about the conditions necessary for the flocculation of the proteins already rendered labile by the denaturing action of heat and light; and the increased "permeability" of the capsule which will probably follow exposure will further assist in allowing abnormal fluid traffic.

(3) *Cataract due (probably largely) to Long Ultra-violet Light. Senile Cataract.*—There is a large amount of evidence which may be brought forward to correlate the incidence of senile cataract with the radiant energy from the sun, and to assume with Hertel and Henker (1910) that it is axiomatic that daylight by a process of adaptation has become innocuous, is probably too sanguine, and certainly unscientific. It seems beyond doubt that cataract is more common in India than it is in Europe, and statistics show that it matures earlier—20 years (Hirschberg, 1898), 10 years (Snell, 1907), while the frequent occurrence of black pigmentation due to melanin in the lenses of natives which are otherwise clear has already been mentioned, and its significance as indicating a first stage in the development of opacity has been indicated. According to Walter (1919) the same thing holds in America, cataract becoming more common as we approach the equator. Daland (1917) remarks upon its frequency in the Arctic regions, where the sunlight is especially rich in ultra-violet, which is reflected from the surface of the snow with dazzling brilliancy. Schwitzer (1895), Grosz (1895), and Hirschberg (1898), comparing workers in the fields with those living in the towns in Germany and Austria, found the incidence of cataract much greater in the former who are exposed all day to the sun. Further, Ascher (1917), over a series of uniocular cases found industrially, states that the side of incidence can be traced definitely to the side of constant brilliant illumination while at work; while with even more refinement of localisation, Handman (1909) states that 81 per cent. and Greene (1908) that 95 per cent. of Indian cataracts commence in the lower quadrant of the lens, where the incident light falls more directly.

The radiation from the sun may be taken as that of a black-hot body at 5000° C. absolute; its spectrum ranges from the infra-red down to 2910 A.U. under the most favourable conditions (Cornu, 1878), the maximum energy density being about the blue-green, 4700–5000 A.U. (Abbot, 1906). The infra-red forms only a small portion of the energy output, and the greater part of it is absorbed by the water vapour of the atmosphere, which may be taken to average a layer of water 1·5 mm. thick; of those which are left the lens absorbs only 3·8 per cent. (Luckiesh, 1913), the main bulk passing to the retina. Any thermal effect, therefore, will be associated with the visible rays rather than the infra-red, and in the lens with its high transparency to these wave-lengths their effect must be small. On the other hand, there will be a large energy absorption in the lower visibles and long ultra-violet between 4000 A.U. and 3000, especially in the adult and senile lens, and this energy is potentially capable of inducing pathological change. No distinction can be drawn between the effect of the infra-red, the visibles, and the longer ultra-violet on the ground of heat radiation, and all attempts at differentiating their action in this sense is scientifically unsound. Abiotic action for the usual intensities ends at the upper limit of about 3100 A.U.; Coblentz and Fulton (1925) state that it may, under favourable conditions, be attained up to 3600; all appreciable action above that is thermic in nature. The large portion of the solar energy absorbed by the lens can, therefore, produce both thermic and abiotic effects.

It is highly improbable that the solar energy induces direct coagulation. The changes are almost certainly of the much more subtle nature we have already discussed—a diminution of the glutathione content lessening very gradually the efficiency of the autoxidation system, and a change of the proteins into a more labile state so that they are more easily coagulated by other factors. Sooner or later the actual occurrence of cataract is determined by changes in hydrogen-ion concentration, in salt content, in osmotic conditions, or in nutritional disturbances.

The objection that has always been raised to the theory of the direct action of sunlight is that in 93 per cent. of cases (Magnus, 1890) senile cataract begins in the periphery where the lens is protected by the iris, and not in the pupillary aperture where the light falls. Apart from the fact that a predilection to the inferior segment has been recognised, this criticism is readily answered. In a slow process of the nature we are considering (diminution of glutathione, &c.) the action will tend to be felt uniformly throughout the lens; further, the greater portion of the shorter waves which are dispersed are reflected at right angles, and will thus affect the periphery towards which they will be concentrated by internal reflection, and where many of them will be absorbed. In this region are situated the younger and more actively growing fibres which will call for the highest efficiency of the autoxidation system to maintain their more active metabolism. These will, therefore, be the first to be affected by its deterioration. At the periphery, moreover, it has been shown by the injection of dyes that most of the fluid interchange into the lens occurs, and the effects of any change in the nature of the ocular fluids will therefore be first seen here.

The hypothesis was first advanced by Peters (1900) that senile cataract was due to disturbed nutrition owing to pathological change in the ciliary epithelium. Van der Hoeve suggested in 1912 and later (1918) elaborated the theory that the light, which was dispersed in its passage through the lens, on falling upon the ciliary body, would cause minute damage of such a nature that could not be detected clinically or microscopically, and that this would result in impaired nutrition and consequent degeneration of the lens. It is difficult, however, to believe that the ciliary body of all cataractous persons is diseased, and, moreover, the same arguments apply to the present case as we have considered in the discussion of occupational cataract. In addition, the factor of physiological repair to slight damage in a tissue with the metabolic activity of the ciliary body must be taken into account. The fact that 65 per cent. of persons between 51 and 60 years (Horlacher, 1918) and 96 per cent. of those above 60 (Barth, 1914) have lenticular opacities detectable by the slit-lamp would seem to be more probably explained by the known and experimentally proved action of radiant energy on the autoxidation system of the lens and the stability of its colloid system.

(4) *Cataract due to very short Wave-lengths.*—The occurrence of cataract due to gamma rays is rare, presumably owing to the rarity of sufficient exposures. Ascher (1925) and Salus (1925) report several cases where treatment was given for eye diseases by the prolonged application of radium. The opacity usually develops some time later in the posterior cortex. Opacity of the cornea occurs as well. Williams (1920) reports a case where the evidence points to a cataract developing bilaterally in a woman of 40 years as being due to a course of 60 treatments of X rays to her face.

(5) *Other Forms of Cataract; Diabetic Cataract.*—Two conditions are met with in diabetes; in the first place senile cataract is comparatively common and appears at a relatively early age, while in the second a characteristic form of cataract peculiar to the disease occurs, although with much greater rarity. The differential diagnosis can best be made by the slit-lamp, and on its basis Schnyder (1923) found one case of true diabetic cataract in 50 cases of senile cataract occurring in diabetic subjects. The main factor which, in all probability, determines the high incidence and early occurrence of senile cataract is the fact already considered that both sugar and acetone in small quantities sensitise proteins, including the lens proteins, to the denaturing action of light, while, in addition to this, the diabetic state, by subjecting *the lens to an osmotic deforming force and abnormal* fluid traffic, induces the condition still more readily, accelerates its rate of development, and tends to alter its type. *True diabetic cataract is largely* determined by the latter factor.

The writer (1925) has already suggested that in the rising sugar concentration of *diabetes*, provided the available water reserve is maintained, the osmotic pressure of the aqueous tends to decrease; fluid therefore tends to flow in to the lens. If the process is a relatively mild one the lens swells and is deformed, its curvature and refractive power are increased, and the eye tends to become myopic; if, however, the change is greater and the inflow of fluid more rapid, actual droplets are formed under the capsule, and the transparency of the lens is impaired by the irregular dispersion of light at the interfaces between the two media of different refractive indices—aqueous and lens fibres. These fluid vacuoles have been noted in cases of acute diabetic myopia by Lundsgaard (1910) and *Strickler* (1911), and they are readily seen in cases of typical diabetic cataract (Schnyder). A "cataract" is thus formed with great rapidity. *Conversely, with a fall in sugar* concentration, a reverse osmotic flow is set up, fluid flows out of the lens, and in the first case the eye becomes of normal or hypermetropic *refraction*; *in the second, provided further* organic changes have not taken place, the fluid droplets will disappear, and the cataract clears up, as has been observed in diabetes by Nettleship (1885), Nicholson (1923), Joslin (1924), and Fischer (1924). This abnormal fluid traffic and the formation of actual droplets between the *lens fibres* will in time induce actual opacity of the latter, a process no doubt largely aided in part by the actual strain of mechanical deformation tending to *protein denaturation* (a seemingly slight force, but at the same time possibly comparable to the coagulation occurring on the surface of a soap bubble or *between the phases* of two immiscible fluids), in part by changes in the hydrogen-ion concentration and salt content, and in part by the upset of the autoxidation system. *This last* might well affect the soluble β-krystalline and the glutathione, which, being diffusible, might be carried away through the capsule whose "permeability" is almost certain to suffer in the general malnutrition that accompanies diabetes.

A peculiarly *oedematous state of the ciliary* epithelium in diabetes has been described by Kamocki (1887) and corroborated by Zentmayer (1913), which, being peculiar to this disease, was *attributed* by its discoverer to a specific "cytotoxin"—an explanation hitherto accepted—and was supposed to be a causal *agent in the incidence of diabetic cataract*, acting, as the infra-red rays were said to act in occupational cataract, by inducing lenticular malnutrition indirectly through changes in the aqueous. Since, however, all signs of inflammation are absent and the appearances described are evidently passive, the more likely explanation would appear to be that they are osmotic in origin—a purely physical process of œdema, running parallel with, and having no causal relation to, similar processes occurring in the lens itself.

The clinical characteristics of this form of cataract indicate the importance of this osmotic process in its origin. It always occurs when the sugar concentration is high, and usually when the patient is fairly well—i.e., when he has sufficient fluid reserve. It is practically always bilateral (54 out of 56 cases, Zeller, 1899), and the change starts immediately under the capsule. *It frequently occurs in young subjects*—11 months (Major and Curran, 1925), 5 years (Frey, 1887), 7 years (Schnyder, 1923); it comes on rapidly *and matures quickly, often in a few days*—4 days (Scheffels, 1898), 11 days (Neuburgers, 1893)—and it seldom requires more than a few weeks. With the *slit-lamp the symmetrical opacity in the subcapsular* region is in the early stage seen to be made up of discrete drops of fluid of diameter 0·04 to 0·1 mm. (Schnyder, 1923), larger at the anterior pole, often confluent at the posterior, while the more superficial lens fibres are separated by larger spindle-shaped fluid lacunæ.

The *Cataract of Cholera* is probably to be associated with a similar process. It is said to be due to the abstraction of water from the lens due to the general dehydration (Fuchs), but the opposite process, as in other forms of cataract, is probably at work. In this disease the bowel mucosa is disorganised and allows the passage of material from the blood in the order, first, water and salts, later, organic substances and proteins. This preferential early loss of the dialysable and osmotically active constituents, while rendering the blood more viscous, will make it in the osmotic sense more dilute, and if the fluid volume is at all kept up, water will tend to flow into the lens, inducing opacity as in diabetes.

*Complicated Cataract.*—The determining factors in the formation of complicated cataract are probably *malnutrition and the influence of toxins, acting directly* on the lens substance, or indirectly by altering the permeability of the capsule. It occurs typically in *chronic, slow inflammations, and its localisation to the* posterior cortex in the majority of cases is to be correlated with the fact that here the capsule, being thinnest (*Ulrich, 1893*), *permits of diffusion* more readily than elsewhere, and that here the membrane surrounding the vitreous is firmly attached to it; a slow degenerative change will involve shrinkage both of the lens and of the vitreous, and thus, subjected to the double pull of two shrinking bodies at this point, disorganisation will be hastened by the separation of the fibres and detachment of the capsule allowing the ready accumulation of fluid. Moreover, in the supply of toxic materials, the central hyaloid lymph tract may exert a localising influence (Healy, 1921). The work of Burge (1916), showing the marked influence of calcium salts in the *coagulation of lens proteins* by ultra-violet light is to be associated with the occurrence of cataract in conditions as tetany, myotonia, and aparathyroidea, whether induced experimentally (Hiroishi, 1924) or met with clinically.

Anterior polar cataract, due to approximation of the cornea to the lens capsule, and posterior polar cataract, due to persistence of the hyaloid artery, are not to be considered in the same category. Neither is lamellar cataract, wherein the opacity is due to a number of globule-like vacuoles which are the remains of degenerated or undeveloped fibre cells, a developmental change which is to be correlated with similar hypoplastic changes in the teeth and the skeletal and cutaneous tissues, the result of a general constitutional disturbance.

### *Conclusion.*

The thesis advanced, therefore, is that the primary cause of cataract generally is probably to be associated with the direct action of incident radiant energy of any wave-length on the lens, increasing the lability of its colloidal system and deranging the autoxidation system upon which its metabolism depends. This renders its proteins more prone to coagulation by changes in the hydrogen-ion concentration (which also affects the autoxidation system directly), changes in the salt content, osmotic changes determined locally by the action of radiant energy on the lens capsule or by general metabolic disturbances, and by possible continuous photosensitisation. To these must be added the influence of more subtle factors inseparable from the economy of so complex a physico-chemical mechanism as is living matter; but in the present state of our knowledge it seems most profitable and fertile to try to elucidate these processes by reducing them as far as is possible to the known laws of chemistry and physics, instead of taking refuge behind these meaningless terms so frequently used in pathological thought—malnutrition, degeneration, and toxic action.

It must not be imagined that a complete theory is here elaborated, but rather a tentative hypothesis is offered which touches merely the fringe of the matter. Much of the work which has been referred to requires corroboration; much more requires to be done. The experimental work which has been mentioned will be detailed and elaborated at a later date. The publication of these observations at this early stage is merely an endeavour to stimulate interest in a fascinating problem and to point out the lines along which the writer thinks it might most reasonably be approached.

### *Bibliography to Part II.*

Abbot: Astrophys. Jour., xxiv., 3 and 197, 1906.
Abderhalden und Wertheimer: Pflüger's Arch. f. d. ges. Physiol., cxcvii., 191, 1922.
*Adams, D. R.: Proc. Roy. Soc., B., xcviii., 244, 1925.*
Ahlgren: Skand. Arch. f. Physiol., xliii, 196, 1923.
Alphonse, B.: Arch. f. Augen., lxiv., 277, 1909.
Ascher, K.: Deut. Ophthal. Gesell., Tschechoslowakei, November, 1925; Med. Klin., No. 19, 1917.
Aschkinass, E.: Wied. Ann. d. Physik., lv., 401, 1895; Zeit. f. Physiol. u. Psychol. d. Sinnesorg, xi., 44, 1896.
Barth: Dissert., Basle, 1914.
Bechold, H.: Münch. Med. Woch., liv., No. 39, S. 1921, 1907.
Birch-Hirschfeld: Arch. f. Ophthal., lviii., 469, 1904; lix., 229, 1904; Klin. Monat. f. Augen., xlvi., ii., 129, 1908.
Bovie, W. T.: Science, xxxvii., 24 and 373, 1913.
Bridgman, P. W.: Jour. Biol. Chem., xix., 511, 1914.
Brinton: Internat. Congress Med., London, vol. xi., pt. 2, p. 75, 1913.
Burdon-Cooper: Ophthal. Rev., xxxiii., 391, 1914.
Burge: Arch. of Ophthal., xxxviii., 47, 1909; Arch. of Ophthal., xliv., 498, 1915; xlvi., 12, 1917; Amer. Jour. Physiol., xxxvi., 21, 1914; Amer. Jour. Physiol., xxxix., 335, 1916; xliii., 429, 1917.
Chalupecky: Wien. med. Woch., lxiii., No. 31, 1902; No. 32, 1986, 1913; lxiv., No. 27, 1914; Strahlentherapie, viii., 141, 1918.
Charpentier: La Lumière et les Couleurs, p. 138.
Chick, H., and Martin, C. J.: Jour. Physiol., xl., 404, 1910; xliii., 1, 1911; xlv., 61 and 261, 1912.
Clark, J. H.: Amer. Jour. Physiol., lxi., 72, 1922.
Coblentz, W. W., and Fulton, H. R.: Scientific Papers of the Bureau of Standards, xix., No. 493, 1924.
Collins, T., and Mayou, M. S.: The Pathology and Bacteriology of the Eye, 1925.
Cornu: Étude du Spectre Solaire, Comp. rend., 1878.
Criland, B.: Internat. Congress Med., London, ix., pt. 2, 1913; Ophthalmoscope, xiii., 126, 1915; Brit. Jour. Ophthal., v., 193, 1921.
Critchett, A.: Internat. Congress Med., London, ix., pt. 2, 1913.
Crookes, W.: Phil. Trans. Roy. Soc., A., ccxiv., 1, 1914.
Czerny, K.: Acad. d. Wissen., lvi., 2, 1867.
*Daland*: Ophthal. Record, xxvi., 116, 1917.
Deutschmann: Arch. f. Ophthal., xxiii., H. 3, S. 112, 1877; xxv., H. 2, S. 213, 1879; xxvii., 241, 1882; Pflüger's Arch. f. d. ges. Physiol., xx., 420, 1879; xxii., 41, 1880.
Dreyer and Haussen: Comp. rend. de l'Acad. des Sc., cxlv., 234, 1917.
Duke-Elder, W. S.: Brit. Jour. Ophthal., ix., 167, 1925.
Eisler: Biochem. Zeit., cxxxv., 416, 1923.
Fernan, A., and Pauli, W.: Bioch. Zeit., lxx., 426, 1915.
Fischer: Klin. Monat. f. Augen., lxxiii., 783, 1924.
Frey: London Medical Record, 1887.
Fuchs: *Text-book of Ophthalmology* (Duane).
Glancy, A. E.: Amer. Jour. of Physiol. Optics, iv., 125, 1923.
Goldschmidt: Arch. f. Ophthal., xciii., 447, 1917; Bioch. Zeit., cxxvii., 210, 1922; Arch. f. Ophthal., cxiii., 100, 1924.
Graham, W. P.: Amer. Jour. Physiol. Optics, iv., 125, 1923.
Greene: Jour. Amer. Med. Assoc., li., 400, 1908.
Grinella, A.: Arch. f. Ophthal., cxiv., 483, 1924.
Grosz: Arch. f. Augen., lvii., 40, 1907.
Hallauer: Klin. Monat. f. Augen., xlvii., 721, 1909.
Handmann: Klin. Monat. f. Augen., xlvii., 692, 1909.
Harris: Proc. Roy. Soc., B., xciv., 426, 1922.
Hartridge and Hill, A. V.: Proc. Roy. Soc., B., lxxxix., 58, 1915.
Healy, J. J.: Brit. Jour. Ophthal., v., 194. 1921.
Hertel, E.: Arch. f. Ophthal., cv., 420, 1921.
Hertel and Henker: Arch. f. Ophthal., lxxiii., 590, 1910.
Herzau: Klin. Monat. f. Augen., xlvi., I., 179, 1908; Ref. Sitz. Verein. der Augenaerzte, 1907.
*Herzog: Bericht d. Ophthal. Gesell., Heidelberg, S. 164, 1903.*
Hess, C. von: Bericht der Ophthal. Gesell., Heidelberg, 1887; Internat. Ophthal. Kong., 1888.
Hess: Arch. f. Augen., lvii., 185, 1907; lx., 29, 1908; lxii., 293, 1909; lxxv., 127, 1913.
Heubel: Pflüger's Arch. f. d. ges. Physiol., xx., 114, 1879; xxi., 153, 1880.
Hippel, E. von: Arch. f. Ophthal., lxv., 326, 1907.
Hiroishi: Arch. f. Ophthal., cxiii., 381, 1924.
Hirschberg: Centralb. f. Augen., xxii., No. 6, 113, 1898.
Hoeve, Van der: Nederl. Tijdschr. v. Geneek., 660, 1912; Arch. f. Ophthal., xcviii., 1, 38, and 49, 1918; Klin. Monat. f. Augen., lxviii., 492, 1918.
Homer, A.: Biochem. Jour., xiv., 42, 1920.
Horlascher: Dissert., Basle, 1918.
Howell: Vide Clark Lighting in Relation to Public Health, p. 164, 1924.
Jess: Zeit. f. Biol., lxi., 93, 1913; Zeit. f. Physiol. Chemie, cix., 189, 1920; Arch. f. Ophthal., cv., 428, 1921; cix., 463, 1922.
Joslin: The Treatment of Diabetes Mellitus, N.Y., 1924.
Kamocki: Arch. f. Augen., xvii., 17, 1887.
Kiribuchi: Arch. f. Ophthal., l., 1, 1900.
Kranz: Klin. Monat. f. Augen., lxxiv., 26, 1925.
Langenbeck: Vide Graefe-Saemisch Hbd. f. d. ges. Ophthal., 2 aufl., Bd. II., 1903.
Laptschinsky: Pflüger's Arch. f. d. ges. Physiol., xiii., 631, 1876.
Leber: Arch. f. Ophthal., xxviii., 255, 1882; Graefe-Saemisch Hbd., 2 aufl., B. II., S. 454, 1903.
Legge: Home Office Report on Glass Workers, 1907.
Loeb Cascio: Ann. di Ottal. e Clin. Ocul., p. 219, 1922.
Luckiesh: Electric World, lxii., 844, 1913; lxvi., 576, 1915; Amer. Jour. Physiol. Optics, ii., 3, 1921.
Lundsgaard, K. K. K.: *Klin. Monat. f. Augen., xlviii., 38, 1910.*
McHardy: Trans. Ophthal. Soc. U.K., ii., 1882.
Magnus, H.: Arch. f. Ophthal., xxxvi., H. 4, 150, 1890.
Major and Curran: Jour. Amer. Med. Assoc., lxxxiv., 674, 1925.
Manca and Ovio: Arch. di Ottalm., xxvii., 1898.
Martin, E. K.: Proc. Roy. Soc., B., lxxxv., 319, 1912.
Meesman, A.: Arch. f. Augen., xciv., 115, 1924.
Meyhöfer: Klin. Monat. f. Augen., xxiv., 49, 1886; xxvi., 375, 1888; Pflüger's Arch. f. d. ges. Physiol., cxcix., 531, 1923.
Mond, R.: Pflüger's Arch. f. d. ges. Physiol., cxcvi., 540, 1922; cc., 374, 1925.
Morner: Zeit. f. Physiol. Chemie, xviii., 213, 1894; xciii., 175, 1915.
Muller, H.: Arch. f. Ophthal., civ., 503, 1924.
Nelson: Klin. Monat. f. Augen., lxx., 641, 1923.
Nettleship, E.: Trans. Ophthal. Soc. U.K., v., 1885.
Neuburgers: Centralb. f. Augen., 165, 1893.
Nicholson: Clifton Med. Bull., ix., 54, 1923.
Panas: Traité des Maladies des Yeux, i., 531, 1894.
Parsons, J. H.: Science Progress, iv., 46, 1909; Jour. Amer. Med. Assoc., lv., 2027, 1910; Internat. Congress Med., London, ix., pt. 1, 193, 1913.
Paton, L.: Trans. Ophthal. Soc. U.K., xxix., 37, 1909.
Pauli, W., and Handovski, H.: Bioch. Zeit., xviii., 340, 1909; xxiv., 239, 1910.
Peters: Breicht d. Ophthal. Gesell., Heidelberg, S. 199, 1900.
Reis: Arch. f. Augen., lxxii., 156, 1912.
*Richen: Zeit. f. Augen., xxxi., 20, 1914.*
Roberts, B. H. St. Clair: Brit. Jour. Ophthal., v., 210, 1921.
Robertson, T. Brailsford: Biochem. Jour., ix., 303, 1911.
Römer: Arch. f. Ophthal., lv., 56, 1903; lx., 159, 1905.
Ruppel: Deut. med. Woch., xlix., 40, 1923.
Salus: Deut. Ophthal. Gesell., Tschechoslowakei, November, 1925; also Guttmann and Treatler, Heidelberger Kongress, SS. 357–8, 1905.
Schanz, F.: Bioch. Zeit., lxxi., 406, 1915; Pflüger's Arch. f. d. ges. Physiol., clxi., 384, 1915; clxiv., 445, 1916; clxix., 82, 1917; clxx., 646, 1918; Arch. f. Ophthal., cvi., 171, 1921; cvii., 100, 1922.
Schanz und Stockhausen: Arch. f. Ophthal., lxxiii., 184, 553, 1909.
Scheffels: Ophthal. Klinik, S. 1241, 1898.
Schnyder, W. F.: Klin. Monat. f. Augen., lxx., No. 1, 45, 1923; Arch. f. Ophthal., cxvi., 471, 1926.
Schulek: Ungar. Beitr. z. Augen., i., 101, 1895.
Schwitzer: Ungar. Beitr. z. Augen., ii., 191, 1895.
Shoji, Y.: Mitteil d. med. Fakult. d. Univ. Tokyo, xxix., 61, 1922.
Snell: Brit. Med. Jour., January, 1907.
Soret: *Comp. rend. de l'Acad. des Sc.*, xcvii., 314, 572, 1893.
Stock: Sitz. verein. der Augenaerzte der Provinz Sachsen, Anhalts. u. Thüringens, 1907.
Strickler: Ophthal. Record, 327, 1911.
Tribondeau and Belley: Arch. d'éléctricité Médicale, par Bergonié, No. 277, December, 1907.
Trümpy, E.: Arch. f. Ophthal., cxv., 405, 1925.
Ulrich: Arch. f. Augen., lxxxvi., 206, 1898.
Valetin: Zeit. f. Physiol. Chemie, cv., 33, 1919.
Verhoeff and Bell: Proc. Amer. Acad. of Arts and Sciences, li., No. xiii., 629, 1916.
Vogt, A.: *Arch. f. Ophthal., lxxxi., 135, 1912; lxxxiii., 99, 1912;* Zeit. f. Augen., xl., H. 3, 1918; Schweiz. med. Woch., lv., No. 20, 425, 1925.
Walter, T. J.: Jour. Florida Med. Assoc., ii., 132, 1919.
Wenzel: Handb. des Augenaerztes, i., 99, 1808.

*(Bibliography continued at foot of opposite page.)*

# A SIMPLIFIED TECHNIQUE FOR BLOOD TRANSFUSION BY THE KIMPTON-BROWN METHOD.

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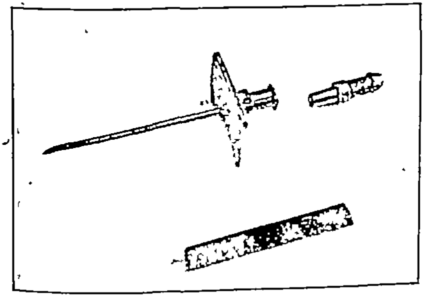
AT the present time the citrate methods of blood transfusion seem to be generally in favour, but where it is possible to bring the donor and patient together my preference is still for whole blood transfusion by the Kimpton-Brown tube. One practical disadvantage in using the Kimpton tube has been the necessity for cutting down on the donor's vein. Many professional donors, or donors not related to the patient, object to having an incision made which needs sutures and subsequent dressings.

In this article I wish to describe briefly a simple and efficient method for filling a Kimpton tube through a needle. As long ago as 1910 Vincent[1] described such a method, using a modified Kimpton tube which had the delivery tip ground so as to make an air-tight connexion with a special needle. He advocated coating the needle with paraffin wax by heating it in a dish of melted paraffin, and after removal the lumen of the needle was maintained by blowing a current of air through it while cooling.

### *Technique.*

The technique which I have employed with success in a series of cases is indicated by the accompanying illustrations. The needle is the Kaliski[2] pattern, gauge 15, with a metal connecting piece and a short length of rubber tubing (size 9, 1¼ in. long) which completes the junction with the Kimpton tube (Fig. 1). A 500 c.cm. Kimpton tube is sterilised by boiling, and a film of paraffin wax is deposited in it from an ethereal solution in the ordinary way. The needle, connecting piece, and rubber tubing are prepared by boiling; it is not necessary to paraffin them. The apparatus is put together in such a way that the end of the nozzle of the Kimpton tube just touches the metal coupler, so that the rubber tubing is practically not in contact with the flowing stream of blood (Fig. 2).

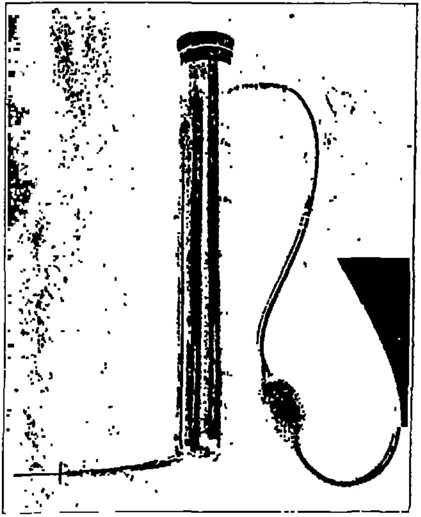
FIG. 1.



The Kaliski needle, connecting piece, and the short length of rubber tubing for making the junction with the Kimpton tube.

When collecting blood from the donor an assistant supports the tube and follows the movements of the operator in order to give him as much freedom as possible in manipulating the needle. A tourniquet is placed round the arm of the donor, and after injecting a few drops of novocaine solution a small nick is made in the skin over the selected vein. The needle is passed into the vein towards the wrist until blood is seen to flow freely into the tube. The suction end of a Higginson's syringe (marked by a piece of tape or bandage) is connected to the Kimpton tube and helps the inflowing blood.

FIG. 2.



The apparatus fitted together ready for collecting blood.

As a rule I pour a small quantity of sodium citrate solution, 3·8 per cent., into the Kimpton tube previous to puncturing the vein. The citrate is pushed up as a layer about half an inch deep on top of the column of blood and enables the whole amount of blood eventually to be given to the patient without risk of blowing air into the vein. If it is desired to fill a second tube it is easy to do so without removing the needle, the metal couplers making it a simple matter to disconnect the full tube and join up the new one. If only 500 c.cm. of blood is required the tourniquet is loosened, and the needle is withdrawn from the donor's vein. An assistant applies digital pressure over the vein to prevent a hæmatoma forming. The rubber tubing with the needle is then rapidly slipped off the Kimpton tube, and a swab soaked in 3·8 per cent. sodium citrate is held over the nozzle until it is passed into the recipient's vein which has previously been prepared, with mosquito forceps marking the edges of the vein. The Higginson's syringe is now reversed in order to expel the blood.

It is necessary in all cases to cut down on the recipient's vein. In difficult cases where the recipients have very small veins there is often considerable anxiety in introducing the nozzle of the Kimpton tube. In such cases it might prove advantageous to

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[1] Vincent, B.: Surg., Gyn., and Obst., 1910, ii., 621.
[2] Kaliski, David J.: Med. Record, 1913, lxxxvii., 432.

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Wernock: Vide Ammon's Zeit. f. Ophthal., iv., 11, 1834.
Widmark: Skand. Arch. f. Physiol., i., 1889; iii., 1891; Mitt. aus d. Augenklin. d. Carol. Med.-Chir. Instit. zu Stockholm, i, 1898
Williams, O.: Amer. Jour. Ophthal., iii., 433, 1920.
Young: Proc. Roy. Soc., B., xciii., 235, 1922.
Zeller: Dissert., Tübingen, 1899.
Zentmayer: Ophthal. Record, xxii., 203, 1913.

incise the vein and tie in a Kaliski needle just before the tube is ready to be taken from the donor. One could then make a metal to metal junction between the full tube of blood and the recipient; there could never be any difficulty about this.

This method of filling a Kimpton tube by means of a needle is applicable to any case where the donor has the veins of the average healthy adult male. As a rule the tube fills just as quickly as when it is inserted directly into the vein. Where the donor's veins are small and indefinite it is advisable to cut down on the vein and fill the tube directly in the ordinary way.

I have used this method of blood transfusion in a considerable number of cases in the last 15 months, and can strongly recommend it. I obtained the needles here illustrated from Messrs. T. G. Hartz, of Toronto, where I was fortunate enough to see the Kaliski needle employed so skilfully in the syringe method of blood transfusion by the surgical staffs of the General Hospital and the Hospital for Sick Children.

# Clinical and Laboratory Notes.

## AN UNUSUAL CASE OF ACUTE ABDOMINAL EMERGENCY.

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THE following case of acute abdominal emergency, which belongs to a class of rare occurrence in the practice of a London hospital, is of unusual interest from a surgical point of view.

L. O. H., a frail boy aged 6 years, was admitted on Jan. 16th, 1926, with abdominal pain. The history given was that five days previously the boy was playing on a ladder in a garden when he slipped and fell a few feet, injuring the upper part of the right thigh; shortly afterwards he vomited and complained of abdominal pain. He was put to bed and three days later had recovered sufficiently to be allowed to get up; then, however, the abdominal pain returned and two days later his doctor ordered his admission to hospital. On clinical examination there was a small abrasion about 2 inches below the inner end of Poupart's ligament on the right side; the lower half of the abdomen showed no respiratory movements, and the right side was tender and rigid. Clinically the condition appeared to be due to an appendix abscess.

An anæsthetic was administered and on palpation, prior to incision, an indefinite lump could be felt nearer the mid-line than would be expected from an ordinary appendix abscess. By a right paramedian incision a quantity of free purulent fluid was found, and the small intestine was seen to be distended. On investigation of the cause of the distension a hard, irregular body was discovered passing across the right iliac fossa and penetrating the root of the mesentery; when it was manipulated out of the wound it proved to be a twig of a tree, which must have been driven into the abdominal cavity at the time of the fall. This twig had pierced the femoral ring, the parietal peritoneum, and the root of the mesentery, and had come to rest alongside the second part of the duodenum. Round the twig there was an abscess, containing thick, creamy pus and walled by the tissues of the iliac fossa and by coils of small intestine. About 6 inches of gut near the terminal part of the ileum was in a condition of doubtful viability, but the patient's state did not allow of resection. A large drainage-tube was inserted into the abscess cavity and the abdomen closed. The track in the thigh was opened up for additional drainage, and as a precaution against possible secondary hæmorrhage from the femoral vessels a piece of ribbon gauze was passed up the femoral ring.

An injection of antitetanus serum was given and the boy made an uninterrupted recovery.

The points of interest in this case are: 1. The unusual path taken by the foreign body. 2. The remarkable escape of the femoral and iliac vessels from injury. 3. The healing by first intention of the path taken by the foreign body. 4. The delay in onset of acute abdominal symptoms. 5. The uncomplicated recovery.

## SERIOUS HÆMORRHAGE FOLLOWING OPENING OF PERITONSILLAR ABSCESS.

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THIS complication seems to be sufficiently uncommon to be worth reporting. Ligature of the external carotid appeared to be the only means of saving the patient's life.

Woman, aged 31, married. Four years ago attended Stratford Hospital for menorrhagia; bleeding continued for three weeks. History of a sore-throat for ten days accompanied by swelling on the right side of the neck. The swelling was diagnosed by her doctor as quinsy and was incised and pus evacuated. On the following day the quinsy was again incised and the day after the wound was opened up with forceps. Considerable bleeding followed (six days prior to admission) and it continued until admission. When seen at 5 A.M. on Jan. 5th, 1926, the patient was pale, lips colourless, skin cold and clammy, temperature 98° F., pulse 120. Much swelling was present in the right peritonsillar region. There were two vertical incisions a quarter of an inch long on the anterior surface of the swelling; from the outer one blood was oozing and the pharynx was full of bright blood. The condition improved, but at 11 A.M. the hæmorrhage started again. At 12 noon I saw the case and decided to tie the external carotid. The operation was rendered extremely difficult by the glandular enlargement and inflammatory condition of the neck, by the fact that the bifurcation of the common carotid was situated behind the angle of the jaw about 2 inches above the usual site, and by finding a regular plexus of large veins over the carotid sheath. On account of the friable nature of the tissues some of the ligatures would not hold and the patient was sent back to bed with three pairs of Spencer Wells forceps controlling the bleeding. These were removed on the fifth day. The wound in the neck, which was very septic, took a long time to heal.

Eventually the patient made a good recovery.

## A CASE OF GANGRENE OF THE NOSE DUE TO DIABETES MELLITUS.

BY K. ARDESHIR, M.R.C.S. ENG.

FROM the inadequate facilities for reference at my disposal, I am only aware of three cases of gangrene of the nose in diabetic subjects, described by Bowers, and quoted by MacLean in the "Medical Annual" for 1925.

An Indian female child, aged 8, was brought to me from a neighbouring village on Jan. 19th, 1926, for a rapidly growing boil on the nose. The history given was that it started as a small pimple some four days back.

On examination I found destruction of the ala nasi on the right side; the tissues round about looked definitely gangrenous. A first glance suggested erysipelas, but the rose-red rash was conspicuously absent. It was unlike anything I had seen before. It certainly did not suggest syphilitic origin. The child was evidently ill and very much emaciated, temperature 99·5° F., pulse 103, respiration 29. On further examination I noticed dermatitis of both hands, tongue foul, mouth very septic. I could squeeze out pus from both tonsils.

Urine examination showed: Reaction acid, sp. gr. 1030. No albumin. No casts. 215 c.cm. of urine was found to contain 4·2 g. of sugar. Both diacetic acid and acetone were present.

Local treatment: I removed the slough with a sharp scissors without any anæsthetic. The affected region was cleansed with normal saline, dried, and a dry dressing applied. The dressing was renewed frequently. The mouth was kept thoroughly clean and a saline purgative was given.

Having no facilities for examining sugar in blood, I administered 5 units of insulin subcutaneously; a similar dose was given the same evening. Next day 10 units had to be given. On the third morning the urine was found to be sugar-free after a total dose of 20 units. On the first day nothing but coffee and plenty of fluid was given; later on she was put on a restricted diabetic diet, and was ordered complete rest. After a week the wound showed signs of healing, and on Feb. 6th it healed up completely. 45 units of insulin had to be given during the 10 days she was under my care. The mother refused to transfer the child to a local hospital, thinking it was completely cured, and returned to her village.

On my return from leave I induced the mother with difficulty to bring the child to me on March 19th. The affected region then looked quite healthy, but for the loss of the alar cartilage; 310 c.cm. of urine was found to contain 0 0 g. of sugar. The general condition of the child seemed to have been fairly well maintained.

The interesting points in the case are: 1. The diabetic gangrene of nose in a child. 2. Rapid recovery under insulin. 3. The possibility of use of insulin in private practice without having facilities for examination of blood-sugar. 4. Difficulty of keeping in touch with patients in India to observe effects of after-treatment. 5. Absence of any provision for the supply of insulin in India free of charge to the poorest patients.

Mhow, Central India.

## TWO CASES OF HORSE-POX.

BY F. W. MARSHALL GREAVES, M.B., CH B. LEEDS, D P.H.,
INSTRUCTOR IN VACCINATION, LEEDS UNIVERSITY.

IT will be remembered that Jenner (1749–1823) found that horse-pox, at that time confounded with "grease," was conveyed by the hands of the servants attending to the infected horses to the udders and teats of the cows, and that the milkers were in turn affected on their abraded hands and contracted cow-pox. Cow-pox was originally classed as "natural" or "casual" according to whether the infection of the disease was acquired by the cow in a natural way, as opposed to direct transference of infection from cow to cow by unintentional inoculation by the milkers.

In 1800 Lupton, of Thame, pointed out that the disease of the horse communicable to the cow and known as "grease" was not really grease but a disease analogous to cow-pox and known as "scratchy heel." In the same year a veterinary surgeon of the name of Tanner had produced a vaccine vesicle by rubbing material from a horse affected with grease on to an accidental sore on a cow. Loy, of Pickering, in the following year subdivided the condition in the horse into two forms, acute and chronic, the former being the only condition he recognised as capable of affecting the cow. The condition was unrecognised in France until 1860, and in 1863 two well-defined outbreaks occurred near Toulouse and were investigated by the French Government.

It has been pointed out that, in the past, epidemics of cow-pox have been associated, sometimes indirectly, with previous or concurrent small-pox in the country, and in the epidemics of cow-pox investigated by the Local Government Board in 1887, and subsequent years until 1910, horses and cows were affected at the same time.

Considering that horse- and cow-pox are said to be almost non-existent in this country, the following two cases, which occurred in the outskirts of an industrial area, appear worthy of note:—

In March, 1914, a farrier, aged 50, was seen on account of sores on the hands and arms which went through the vesicular and pustular stages and later showed scarring. There was considerable general disturbance with swelling and pain of the axillary glands on each side, and the condition cleared up in about 19 days. Attempts at vaccination a month afterwards were unsuccessful. In February, 1924, his son, a shoeing-smith, aged 28, was seen with a similar eruption on the hands, arms, face, and chest. The disposition of the rash in the latter area corresponded to the opening of the shirt, and it is possible that the man had further inoculated himself by scratching this part. He recollected that he had had a horse in with an offensive eruption, particularly of the hind legs, but he was unable afterwards to identify the particular animal. There was very little constitutional disturbance and the condition cleared up in 17 days with very little marking, possibly owing to active antiseptic measures. Tincture of iodine effected the quickest alleviation of the condition. A small white scar, however, remains on the face between the eyebrows as a result of the infection, but the scars on the hands and arms are now almost impossible to find. He had been vaccinated in the Army in 1914 but not very successfully as only one small smooth mark, less than a quarter of a square inch in size, shows as the result. The vaccination marks of infancy are of good size and denote a successful result.

In April this year I suggested to him that he should be vaccinated in order to see whether or not he was immune. Four good-sized areas were accordingly scarified and a lymph of known potency rubbed well in. The condition never went beyond the papular stage, aborting on the fourth evening; it must, however, I think, be classed as a positive reaction. It is a matter of regret that the case was not proceeded with on the line of inoculation, transference to the rabbit, &c., but this was not possible at the time. It is an interesting speculation that the so-called "safe" routes over the desert in the early and Middle Ages (by "safe" I mean free from disease in general and small-pox in particular) owed their safety to the inoculation of the camel drivers and attendants with some form of camel-pox, thus rendering them immune to small-pox.

*References.*—J. G. Adami · Proc. Med. Chir. Soc., Montreal, 1923. Baron: Life of Jenner. Cory: Theory and Practice of Vaccination, 1898. S. Monckton Copeman: Vaccination. R. J. Reece · Account of Outbreak amongst Horses and Cows, Proc. Roy. Soc. Med., 1921.

# Medical Societies.

## ROYAL ACADEMY OF MEDICINE IN IRELAND.

### SECTION OF OBSTETRICS.

A MEETING of this Section was held on May 28th. In the absence of the President, Sir WILLIAM SMYLY took the chair.

*Annual Report of the Coombe Lying-in Hospital.*

Dr. LOUIS CASSIDY, the Master of the Coombe Lying-in Hospital, read the annual report of this Hospital for 1925. He said that the total number of admissions for the year ending Dec. 31st, 1925, was 934, an increase of 186 on the previous year. Eight maternal deaths occurred during the year, a percentage of 0·85, and the number of cases of maternal morbidity was 42, a percentage of 4·5, and an average of 1 case in 22. This showed a big reduction on the previous year's morbidity. The tables were striking, for they showed 24 cases of morbidity in which no vaginal examination had been made, no laceration of the perineum had taken place, and there had been no operative interference. A rise of temperature had occurred 12 times amongst the operative cases, of which two were breech delivery by Smellie's method, one was internal version, three were craniotomy, and six forceps cases. In four other cases rise of temperature was caused by extra-genital infection. Twenty-five cases were examined before labour set in to determine what organisms were present in the vagina and whether they had any bearing on the puerperium. None of the cases had any puerperal rise of temperature, although four showed pure culture of Döderlein's bacillus and 18 showed a mixed growth, including streptococci and *B. coli*. Three cases only had no vaginal bacilli and the flora in these consisted chiefly of streptococci and vast numbers of coccoid forms. This examination seemed to throw very little light on the problem of the cause of morbidity in the 21 cases mentioned, and it was thought that more promising results would be yielded by investigation of the blood-serum before labour. This was now being done. One of the two fatal cases of puerperal sepsis was a woman who had been in labour three days to whom forceps had been applied three times without success. Vagina, perineum, and bladder had been badly torn, and on admission there were hæmolytic streptococci in the blood.

*Abortions and Hæmorrhages.*—Forty-nine abortions had been treated; experience had proved the text-book classification of causation to be unsatisfactory. In the speaker's opinion syphilis did not account for more than 2 per cent. of cases where there was no displacement of the uterus, but traumatic conditions—e.g., coitus—and bad hygienic conditions were prominent causes. As large a number as 16 cases of placenta prævia were treated during the year, three in primiparæ. All the mothers were saved, but the fœtal mortality was high. The best treatment was Braxton Hicks's version; Cæsarean section should be limited to cases where the child was alive or near full term, the placenta central, and the mother elderly, primiparous, uninfected, and anxious for a living child. There had been 27 cases of external accidental hæmorrhage, all of which had had albumin in catheter specimens of urine, and most of them had had pus, blood, and a few casts as well. He considered that for concealed accidental hæmorrhage pituitary extract was a better treatment than Cæsarean section. The drug should be given in doses of ½ c.cm. every half hour up to 3 c.cm. The shock and collapse should be combated at the same time.

*Eclampsia* had reached the high total of 11 cases, four of them in multiparæ. The mothers had been saved, but five children had been still-born. The treatment in all cases had been stomach and bowel lavage, followed by 4 oz. of sulphate of magnesium through the stomach-tube, the withdrawal of 12 oz. of blood from the median basilic vein, and the administration of two pints of saline under the breasts. A ½ gr. of morphine was given immediately on admission and further doses according to the number of fits. It was noted that the violence of the fits and their incidence decreased very markedly with the onset of perspiration, and in no case had any serious manifestation appeared after sweating had begun. There had been nine cases of threatened eclampsia, 14 cases of nephritis, and two of hyperemesis gravidarum.

*Induction of Labour.*—Labour was induced in nine cases. In seven of them the procedure started with 1 oz. of castor oil, followed 13 hours later by 10 gr. of quinine hydrochloride, a high soap-and-water enema in an hour's time, and two more doses of quinine one hour and four hours later respectively. Thereafter six doses of pituitary extract were given half hourly in ½ c.cm. doses, the first being administered six hours after the last dose of quinine. The results were all satisfactory and the large doses of pituitary extract had had no bad effects on the child. There were four cases of uterine inertia and forceps were applied 57 times, with a maternal mortality of one. There were eight still-born children among the forceps cases, four macerated fœtuses, and four children who died after delivery.

### *Discussion.*

The Chairman congratulated the Master on a report which stated what was wrong in the abnormal cases, what treatment was adopted, and what the results were both as regarded the mother and the child. In all these respects this report gave full information. Regarding mortality, he noticed that there were eight deaths, but one of these patients was not pregnant at all, and he thought that patients who were not pregnant should not be included in the mortality list. He would suggest a statement that so many patients were delivered during the year, and out of these there were so many deaths; instead of as was done, saying that so many patients were treated and there were so many deaths. Some of the cases had come into the hospital apparently in an utterly hopeless condition, and he did not think that anything could possibly have been done to save them. He thought that the morbidity was very small and was most creditable to the hospital. There were three cases in which before admission terrible injury had been inflicted by the use of forceps; this pointed to the importance of knowing when forceps should not be used. In two of the cases forceps had been attempted three times before the patient had been admitted to hospital. In another case treated outside the hospital the patient had been left 20 hours in the second stage. This pointed to the necessity for good midwifery teaching. Referring to Cæsarean section in the treatment of hæmorrage he was glad to notice that this operation had been done twice for placenta prævia. He agreed with the rules that the Master had laid down for this operation, but he felt that as time went on Cæsarean section would be done more often for placenta prævia than it had been in the past. The general tendency in obstetrics was to apply this operation more generally for placenta prævia. As to accidental hæmorrhage, statistics were difficult to compile, since it was hard to know when accidental hæmorrhage actually began and when ordinary bleeding stopped. He felt that it was still an open question as to whether Cæsarean section was advisable in cases of accidental hæmorrhage. He was interested to see that the Master now bled and gave morphia in cases of eclampsia, and thought that the fact that morphia had been given in 11 cases among which there had been no death was a good start. He suggested the use of the word "eclampsism" for cases in which there were no convulsions, instead of "threatened eclampsia," and said that he thought accidental hæmorrhage in the worst cases was the same disease as eclampsia. In curettage after abortions, he asked if the Master used a blunt or a sharp curette.

Dr. Gibbon FitzGibbon, referring to the bacteriological examination of cases of sepsis, said that he was interested to note that the two cases who died of acute sepsis both showed hæmolytic streptococci, and that they were both infected during labour; his experience was that cases of acute sepsis were nearly always streptococcal. He did not think that much was gained by examining the blood in these cases. He also had tried injections of N.A.B. in cases of acute sepsis, but thought it had no influence. The Master stated in the report that he thought toxæmia in pregnancy very seldom occurred before the sixth month; he (Dr. FitzGibbon) agreed that it did not often occur before the twenty-eighth week, except in cases where there was a pre-existing nephritis. Referring to the case of post-partum hæmorrhage with a piece of placenta retained, he said that in cases where the placenta could be got away by a moderate application of Credé's method it was all right to do so, but if this was not possible he, personally, preferred to do a clean manual removal of the placenta. He quite agreed with the Master's view regarding the conservative treatment of cases of accidental hæmorrhage. He noticed that the Master looked upon the occurrence of sweating as a good prognostic sign, and said that formerly patients were put in hot packs to try and promote sweating. He thought that when sweating occurred it was evidence of recovery rather than the cause of it. Regarding the treatment of placenta prævia, he said that he thought it was important to know whether the patient had been 36 or 38 weeks pregnant before deciding what treatment to adopt for this condition. Referring to hyperemesis, he said that he thought the important thing was to find out what the cause of the hyperemesis was. In the case described by the Master he did not think pregnancy was the cause; he thought it was probably a toxic case, as the patient suffered from diseased kidneys. The Master's treatment of cases of uterine inertia was quite different from that practised by the speaker at the Rotunda, and whereas all Dr. Cassidy's cases ended in dead babies, he (the speaker) had got 75 per cent. live babies out of the cases sent in to the Rotunda Hospital, using sedative treatment. In cases of hydatidiform mole, Dr. FitzGibbon induced uterine action by sea-tangle tents, and then emptied the uterus; he did not do hysterotomy. He thought that there were far more toxæmic patients who were chronic nephritis cases than was generally realised, and a great many of these did not clear up with treatment. He was surprised at the finding of albumin and blood in the urine in so large a percentage of all cases. He was interested to note the number of cases that had shown tubercle bacilli in the urine, as on four occasions he had found these in cases of persistent pyelitis. Referring to the post-mortem examination of babies, he said that he carried this out to a small extent, but he did not mention it in the Rotunda Hospital report, owing to the negative findings. In several cases it was found that the baby had died from some congenital condition, which would not have been suspected except for the post-mortem.

Dr. **Bethel Solomons** suggested that the cause of morbidity and mortality among women who had not been examined vaginally was due in many instances to the faulty conduction of the third stage of labour with retention of membranes, although this retention could occur without pyrexia. He questioned the advisability of giving pituitary extract in placenta prævia. The average student was bewildered by the various views held about accidental hæmorrhage. He hoped that examiners would accept standard views and treatment; there were very few cases of true concealed hæmorrhage. The results in eclampsia from the Rotunda treatment modified by the inclusion of venesection were most satisfactory. Although blood pressure was estimated, 12 oz. of blood were withdrawn as a routine, irrespective of the estimation He thought that some of the cases of uterine inertia would have been better if left alone; he found the Walcher position of great benefit when pains did commence in these troublesome cases, and uterine sedatives were better than stimulants. The pathological report was of great value, and biochemical tests in pregnancy and other laboratory methods should be taught, but it was important to remember in these days that practical clinical instruction was of greater service to the student and the post-graduate who might later be working in places where he could not call in the assistance of the pathologist and the biochemist. With regard to the cause of abortions, many of these were hormonic in origin. In the gynæcological report there were 90 curettage and 25 Alexander Adams operations. The indications for curettage were few, and the disadvantage of not opening the abdomen to correct the position of the uterus was great. Wertheim's operation had been done for "suspected" malignant disease on two occasions. Did the microscope reveal malignancy?

Dr. **A. H. Davidson** drew attention to the fact that in this report the Master had stated that syphilis did not account for more than 2 per cent. of abortions, whereas in the report of the previous year syphilis had accounted for a much larger percentage of abortions. He also drew attention to the danger of giving large doses of pituitary extract in cases of accidental hæmorrhage when the vagina had been plugged; he had seen two cases while at the Rotunda in which rupture of the uterus had followed this treatment. The Master said in the report that in cases of uterine inertia the os was dilated and forceps applied, in the hope of saving the child He (Dr. Davidson) thought that in cases of uterine inertia, where the conditions for the use of forceps were not fulfilled, it was hopeless to attempt to save the child, as the child was always killed by bringing it through an undilated passage, and harm was done to the mother at the same time. He was very interested in the report of the treatment of cases of parametritis by radiant heat, and asked what the results had been, as it seemed to him a good method.

Dr. **D. J. Cannon**, referring to uterine inertia, said that sometimes good results were obtained by the giving of pituitary extract and sometimes not. He asked whether it would not be possible to discriminate between the cases which needed this drug and those which only needed ordinary treatment. In cases of concealed accidental hæmorrhage shock was the essential cause of the hæmorrhage, whatever the cause of the shock might be, and in the case of accidental hæmorrhage which died he wondered whether, if morphia had been given instead of pituitary, the result would have been better. Referring to morbidity, he asked if a vaginal examination was made when looking for the cord, or if in the Coombe Hospital they just waited till the cord appeared. If this was done he thought there was a danger of sepsis, and that then, strictly speaking, the cases would not be cases of spontaneous labour.

### *Reply.*

The **Master** of the Coombe Hospital, in replying, said that Cæsarean section was done a good deal for placenta prævia, because this condition occurred so often in multiparæ or in women who were not more than 32 weeks pregnant. Cæsarean section should never be undertaken with the object of saving the child's life unless the child was 36 weeks old, as up to that time the child was very small. In cases of eclampsia he thought that bleeding should be done independently of the condition of the pulse; the giving of morphia in these cases might have a great deal to do with the question of fœtal mortality. In cases of curettage after abortions he used a blunt curette. In cases of sepsis he thought the examination of the blood was of value if the blood was taken when the temperature was high; after a rigor the chances of demonstrating streptococci were fairly good. As yet there was no really definite form of treatment for cases of sepsis, but in some cases he had found that the injection of N.A B. intravenously had produced most dramatic results. In cases of abortion it was practically impossible to demonstrate any change in metabolism before the twenty-fourth week. He had never seen any danger occur in any case from the use of pituitary extract in cases of accidental hæmorrhage Referring to the routine examination of urine, he said that by this means they had found that the presence of pus in the urine in pregnant women was very frequent, and albumin was also found in a very large percentage of cases. Pituitary extract was only given in cases of placenta prævia, when there was a definite hope that by small doses it would be possible to stimulate uterine contractions. In some cases it was valuable, but the chances of rupture of the uterus in cases where it had been used were much greater than in cases where it had not been used. No septic cases had been sent out of the hospital. One patient, who had a perfectly normal puerperium, left hospital against the wishes of the staff on the ninth day and died from acute sepsis at home on the fourteenth day. Most of the curettages were done as a result of abortions, and he thought that it was a good thing to do this operation after an abortion. Before Alexander Adams's operation was done the tubes were always tested. Both the suspected cases of carcinoma had turned out later to be carcinoma. Every case, of course, must be judged on its merits, and he was of opinion that pituitary extract was a most useful drug to give if given with common sense. The results in cases of parametritis from radiant heat treatment had been very satisfactory.

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**London Dermatological Society.**—The annual oration of this society was delivered on June 16th at St. John's Hospital, Leicester-square, by Sir Humphry Rolleston, on the Relations of Dermatology and General Medicine. Dr. W. Griffith, the President, was in the chair. At the conclusion of the meeting a vote of thanks to the orator was proposed by Dr. Knowsley Sibley, and seconded by Dr. J. M. H. MacLeod. The annual dinner was held at the Trocadero Restaurant after the meeting. The following were among the official guests of the society: Sir Humphry Rolleston, Dr. J. H. Stowers, Dr. J. H. Sequeira, Dr. H. Haldin Davis, Dr. H. W. Barber, and Dr. H. G. Adamson.

# ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

AT a meeting of this Society on June 17th, at the rooms of the Medical Society of London, the chair was occupied by Dr. ANDREW BALFOUR, the President.

### *Presentation of the Manson Medal.*

Before the regular business of the meeting the Manson medal for researches in tropical medicine was presented by the President to Prof. Ettore Marchiafava, of Rome, an honorary Fellow. The felicitations of Dr. Balfour were supplemented by those of the Italian Ambassador and Baron San Severino.

### *Malaria in England.*

Lieut.-Colonel P. JAMES, I.M.S. (Ministry of Health), then read a paper, which was liberally supported by microscopical preparations, on Epidemiological Results of a Laboratory Study of Malaria in England. The official arrangement in this country, he said, by which general paralysis and other mental diseases could be treated by a course of malarial attacks induced by the bites of infected mosquitoes, gave an opportunity of studying, in the laboratory, certain factors of importance in the epidemiology of malaria. The practical object of the work was to provide a sufficiency of mosquitoes to induce a pure infection of benign tertian malaria in patients to be treated. During the period referred to 221 patients received their bites, and of these 169 developed benign tertian malaria within the usual incubation period.

Observations were made, during the routine work, on factors concerned in the transmission of malaria from man to mosquitoes and from mosquitoes to man. It was found to be difficult to bring even a few members of a large brood of mosquitoes to such a condition that they would be successful transmitters of malaria. Among the reasons of this were the following. It was difficult to find a malaria patient who was infective to those insects. In the feeding experiments about three days must elapse before the gametocytes became infective to anopheles, so that a patient in a first attack of malaria did not become infective until quite the tenth day of his illness. But in relapses, gametocytes were present much earlier. One of the most important factors in the infection of anopheles was the number of feeds on infective blood needed before a batch of them became infective. With regard to the influence of temperature, humidity, and season, the experience was that the best results in infecting *Anopheles maculipennis* with *P. vivax* were obtained at temperatures between 22° and 24° C., and in a saturated atmosphere. Another point was that mosquitoes carrying nearly ripe eggs did not suck nearly so much blood as did others, because the swollen ovaries filled the abdomen and pressed so much against the midgut that its cavity was almost closed. When the mosquito fed on certain fruits and foods other than fresh blood the reaction in the stomach was unfavourable to oöcyst development. Fresh human blood seemed to be the only suitable food for the purpose. Some of the mosquitoes fed greedily, some only slightly, therefore they were fed repeatedly on the infecting patient. The mortality of the *maculipennis* above 22° C. was high. It was clear that many special conditions had to be fulfilled in Nature before malaria could be transmitted from man to mosquito, and this would explain why malaria was essentially a "household disease." Some of the mosquitoes in the successful batches lived and continued to be infective for from 29 to 92 days after sporozoites were present in their glands. It seemed that *P. vivax* could be carried through even a severe winter in hibernating mosquitoes, and an infected mosquito nearly always carried zygotes at several stages of development.

The observations which were made by Colonel James and his assistant, Mr. Shute, showed that c [illegible] anopheles mosquitoes became transmitters of malaria. The reason that in many places all the inhabitants had the disease was that when once a mosquito had become infected it continued so for a long time, and could infect many people. It seemed to be beyond doubt that in Nature the only mosquitoes which became transmitters of malaria were those which passed their lives in sheltered and peculiar conditions, like those in the laboratory. Much effort was being wasted when directed against the breeding places of mosquitoes as a whole, and especially in anti-larval measures in the fields and marshes, leaving the mosquito to work its fell will in the houses of the people. The life habits of the particular infective kind of mosquito must be studied, as they differed widely from those of the specific group to which they entomologically belonged. The human dwelling seemed to be the "laboratory" where malaria infection had its origin and was cultivated.

In conclusion, Colonel James said the point had been reached at which the services of the physiologist and the biochemist were needed to say whether there were chemical differences in the blood of the three classes of patients he had called attention to whose blood differed so widely in the degree of hospitality it offered to malaria. And it would be excellent if a test could be devised which would enable patients to be classified in this regard.

### *Discussion.*

Sir PERCY BASSETT-SMITH drew attention to a lesson taught by the research—namely, that those who were engaged in out-of-door occupations did not readily develop malaria, which seemed to show that the amount of exercise they had increased their phagocytosis.

Colonel CLAYTON LANE said that in his view the *maculipennis* was an insect which was sick with malaria, and that was why only a small percentage of the females under observation survived. Hence a heavily malaria-infected mosquito was a source of less danger to the community than a lightly infected one, and it might be that this was a factor in the restriction of the spread of malaria. The most important problem in malaria was that of house infection.

Dr. H. M. HANSCHELL confirmed the remarks of the last speaker, and said that there should be a stricter use of the mosquito net; it was not supplied to the coolie with the same energy as was quinine. He also advocated the use of mosquito traps, and described those which he used in Barbados.

Mr. AGARTH suggested, as an entomologist, that the differences found in persons in their reactions to the bites of infected mosquitoes might be a matter of the relative acidity or alkalinity of the blood, and that the point might be settled by biochemists. Some rat-catchers seemed never to be bitten by rats, or if they were they did not seem to develop ill-effects.

Lieut.-Colonel C. A. GILL, I.M.S., said that the results obtained by Colonel James made it necessary to revise the accepted views on the subject. Two difficulties were the impossibility of measuring the susceptibility of the host and the dose of infection of the sporozoites being given to the patient. He did not agree with Colonel Lane that the house mosquito was sick with malaria.

Dr. H. S. STANNUS remarked on the fact that heavy drinkers in the tropics were very insusceptible to malaria, possibly because mosquitoes did not relish alcohol.

Sir ALMROTH WRIGHT suggested that in his next investigation Colonel James should have the assistance of half a dozen laboratory workers, as the work promised some valuable conclusions on the question of immunity.

Dr. W. RUDOLPH said that by inoculating patients suffering from general paralysis of the insane one could know what the dosage was if infected blood was used, and that was what had been done at the London County Council mental hospital at Claybury. Some of the cases there could not be made to develop malaria, and he suggested that the difference might be related to the glucose content of the blood By adding glucose to the blood one produced sporulation, which did not occur without the glucose At Claybury this treatment of general paralysis had been carried on since August, 1923, and 240 cases had been worked out. Among untreated cases, 77 per cent. died within a year of a remission occurring, whereas 68 per cent. of 63 cases at Claybury with an 18 months history at least had been discharged The outlook for cases with a longer history was less satisfactory, and this supported Colonel James's contention All the patients he was referring to were fully certified

Dr P Manson-Bahr expressed the view that many of the so-called clinical results were not produced by drugs, but were the results of host immunity—in other words, the environment of the patient—and much depended on the patient's state of health Quinine and some other drugs probably did what Nature accomplished in other ways. He saw great possibilities from Colonel James's inquiry

The President, in summing up the discussion, related some of his own experiences. He agreed with what Colonel James said about house infection in this country, but he was sure the remarks did not apply to the tropics.

Colonel James, in his brief reply, accepted Sir Almroth Wright's offer of skilled laboratory assistance in the further stages of this work He again emphasised the great importance of house infection

# Reviews and Notices of Books.

## Industrial Psychology in Great Britain

By Charles S Myers, M D, D Sc., F R S, Director of the National Institute of Industrial Psychology London: Jonathan Cape 1926 Pp 164, 7s 6d

Modern industry is an unforeseen product of human activities, and a basic biological cause of industrial unrest is the difficult adjustment demanded of human nature in face of conditions that give little opportunity for the satisfaction of instinctive desires and tendencies. The desire to make or produce things, for example, is a driving force that found easy expression until modern subdivision of labour deprived the individual worker of the sense of achievement If the only stimulus to work is the need to earn one's daily bread, then interest in that work loses any intrinsic worth, and minor discomforts and difficulties that would be overcome by adequate interest now form serious obstacles to efficiency Since the worker himself is unaware of the mental processes concerned, there arises a vague discontent attaching itself to any chance object or showing itself by inefficient work or irrational behaviour

Faced by these conditions, industrial psychology endeavours to replace the methods of trial and error by a systematic study of the reactions of wage-earners in response to different surroundings. Dr Myers describes how this aim is being reached by the Industrial Fatigue Research Board and the National Institute of Industrial Psychology Begun under the necessity of the war, the work is becoming more and more valued, though one of its results is the formulation of hitherto unsuspected problems. Occupation neuroses, like telegraphist's cramp and miner's nystagmus, have been ascribed to simple causes such as posture or illumination, but Dr Myers finds that evidence is accumulating that the mental factors of worry and anxiety play an important, perhaps the essential, rôle in their causation. Psychoneurotic conditions generally are not to be regarded as the prerogative of intellectual workers or the leisured classes.

A misconception of the aim of industrial psychology has to be guarded against Increase in the comfort and happiness of the worker results in increased output, which is gratifying to the employer and serves as a measure of the benefits obtained, but is not to be regarded as the chief end in view "Speeding up" is not the aim of industrial psychology, and workers whose output has been incidentally raised have often expressed gratitude for increased comfort and lessened fatigue. Dr Myers himself would admit that the work here described under such headings as organisation, fatigue, movement study, and vocational guidance only touches the fringe of many problems that closely concern our industrial efficiency and national prosperity His book is an encouraging record of the results of psychology applied in a sphere where the need for its application is very great.

## Gastric Function in Health and Disease.

By John Ryle, M D Lond, F R C.P, Assistant Physician and Lecturer on Medical Pathology, Guy's Hospital. London Humphrey Milford 1926 Pp 152 8s 6d.

Our readers are, many of them, familiar with Dr Ryle's Goulstonian lectures, which were published in The Lancet (1925, i, 583, 642, 697, and 754) We welcome their appearance in book form because they contain not only a survey of all the more important recent researches in connexion with gastric disease, but include many interesting and scholarly expressions of opinion by the author himself Dr Ryle has been at pains to confine himself chiefly to recent investigations His chapter on the secretory functions of the stomach in health might have been improved by fuller reference to the known facts concerning its mechanism, sparse though such facts be The influence of certain drugs in initiating secretion is, for example, evidence requiring consideration The well selected references included add to the value of the book to all those engaged in the investigation of gastric diseases.

## Chronic Disease: A Working Hypothesis.

By E Bach, M.B, B S., D P H, and C E Wheeler, M D, B S., B.Sc. London: H K. Lewis and Co 1925 Pp 158 7s. 6d

The authors believe that chronic intoxication with non lactose-fermenting organisms of intestinal origin is the chief underlying factor in chronic diseases of diverse types They have treated upwards of 500 of such cases by a diet consisting largely of uncooked vegetable food, together with vaccines, and believe that their results point to such therapeutic measures being of high value We find nothing that is logically convincing in their work, and we trust that the authors will recognise that in saying this we in no way imply that their hypothesis is inaccurate, but that until some definite physical or laboratory indications of chronic intestinal intoxication can be demonstrated beyond doubt, we remain sceptical.

In putting their views to practical test the authors are nevertheless pursuing a valuable work, and we shall welcome further observations from them They write with restraint and enthusiasm combined, and there is perpetual need for clinical inquiries such as they are making

## Collected Papers

Vol IV. By Sigm. Freud, M D, LL.D Authorised translation by Joan Riviere. London: Hogarth Press 1925 Pp 508 21s

The contents of this, the final volume of Freud's collected papers, fall into two parts. The first is devoted to what Freud calls meta psychology, a term by which he means the consideration of a given mental process in accordance with his conceptions of "depth psychology," and with the dynamic factors concerned and the ends served by the process. This triple aspect of mental processes certainly goes beyond the purview of non analytic psychology, but then seems no sound reason for thus accentuating a difference which, in the interests of scientific principles, should not exist. Freud himself argues that the postulate of an unconscious rests upon evidence as strong as that which justifies us in speaking of a consciousness, though to imagine mental processes as having topographical relationships one to another certainly appears to give a false value to what are only conceptions; but there is pragmatic justification for the hypothesis as a convenient means of generalisation. The chapters on instinct, repression, and the unconscious form a connected exposition of the fundamental concepts of psycho-analysis which, though lacking in actual evidence such as the earlier volumes furnish, should be studied by those who find difficulty in giving a scientific status to those concepts. We note the free use of the word "cathexis," but have failed to find a definition of it; it seems to indicate the emotional charge attached to an idea. In the opening paragraph on the topography and dynamics of repression (page 112) we read that repression "must be a matter of withdrawal of cathexis" and then that "it must be something else which has been withdrawn"; possibly there is here a departure from the high standard of translation shown generally in the book, for the passage is difficult to follow.

The second part is a collection of essays, some written as long ago as 1908, treating of non-medical applications of psycho-analysis. The antithetical sense of primal words, a special type of choice of love-object by men, the Moses of Michael Angelo, the "uncanny," a neurosis of demoniacal possession, are some of the subjects handled; in every case, whether the reader is in agreement or not with Freud, he will grant that the handling is original and that interest is aroused to an unexpected degree. "Thoughts for the Times on War and Death," dated 1915, offering an objective view of war-time reactions at that time rare in any belligerent country, could not have lessened the intellectual isolation of the writer which already existed. The chapter on dreams and telepathy, in which a definite pronouncement might have been expected, is entirely non-committal as regards the reality of telepathy in the occult sense. These later chapters may stand as a reward for readers who have, not without effort, worked through the more technical parts of the preceding volumes. This volume contains an index to all four, as well as a bibliography of Freud's writings on psycho-analysis.

### DIAGNOSTIC AND THERAPEUTIC ERRORS.

*Diagnostische und Therapeutische Irrtümer und deren Verhütung.* Edited by Prof. J. Schwalbe. Part VII., Injuries and Surgical Diseases of the Mouth, Throat, and Neck. By Prof. Paul Clairmont. Leipzig: G. Thieme. 1926. Pp. 188. M.8.10.

When reviewing Part XIV. of this series, which appeared in 1922, we remarked that mistakes cannot be discussed without entering pretty thoroughly into the whole subject of diagnosis and treatment of the diseases in question, but that such a work affords an interesting opportunity of approaching these subjects from an angle somewhat different from that offered by the systematic text-books. These remarks apply equally to the present volume, which deals with a great variety of subjects ranging from cleft-palate and diseases of the tongue, to diseases of the larynx and œsophagus. They are discussed from the standpoint of the general surgeon rather than of the laryngologist; indeed, diseases of the larynx and trachea occupy but five pages of text; their consideration is far too abbreviated to be of value and might well have been omitted. The most interesting part of the book consists in the description of diseases and tumours of the neck; wry-neck, cervical ribs, tumours of the salivary glands and of the thyroid gland are discussed, and many rare cases are illustrated. The pictures are excellent, and skiagrams of uncommon cases abound. The volume will provide a store of interesting rea[illegible] surgeons and laryngologists.

### NEUROLOGY.

*Les Tumeurs du Cerveau.* By Prof. Viggo Christiansen, Chief Physician to the Royal Hospital of Denmark. Second edition. Paris: Masson et Cie. 1925. Pp. 399. Fr.45.

We reviewed this book on its first appearance in 1922, commenting on its form as a series of clinical lessons or lectures, and pointing out that it could scarcely be regarded as a complete monograph on its subject, since several varieties of intracranial neoplasm were not mentioned. This second edition is amplified and largely rewritten, and contains material, especially in regard to chiasmatic tumours, which did not appear formerly. At the same time, it lacks that comprehensiveness of treatment which the subject demands. Its clinical value resides mainly in its diagnostic analyses and its graphic and informative accounts of tumour cases. Prof. Christiansen has had reason to modify to some extent his opinions on the results of surgical treatment, more particularly in respect of decompressive operations; he now regards such surgical interference more hopefully than before.

*Syndromes Neuro-Anémiques.* By Dr. Pierre Mathieu, Ancien Interne des Hôpitaux de Paris. Paris: Gaston Doin. 1925. With 20 illustrations and one plate. Pp. 172. Fr.20.

The problem of the pathogenesis of what is usually called in England subacute combined degeneration of the spinal cord still awaits solution. This disease is common, and always serious; hitherto, as usual, too much attention has been devoted to its morbid pathology and too little to experimentation. The condition, further, has been regarded as something sui generis, whereas, as Dr. Mathieu urges with every reason, it is rather a syndrome than a morbid entity. Two of his cases were, as a fact, associated with unsuspected malignant growths of the intestine. In his monograph all that is known of the subject is set forth clearly and concisely, with good bibliographical references, and his own clinico-pathological examples are fully detailed. He is not satisfied either with a vascular or a funicular theory of the spread of the disease, and suggests there is a relationship between certain toxins and certain anatomo-physiological mechanisms of the cord, relying for analogy on known connexions between certain toxins and certain peripheral nerve-mechanisms. The book is a useful contribution to a difficult topic, which has as yet scarcely passed the stage of mere description.

*Brain and Spinal Cord.* A Manual for the Study of the Morphology and Fibre-tracts of the Central Nervous System. By Emil Villiger, Professor in the University of Basel. Edited by William H. F. Addison, B.A., M.D., Professor of Normal Histology and Embryology in the University of Pennsylvania. Third revised American edition. London: J. B. Lippincott Co. 1925. With 262 illustrations, many in colour. Pp. 335. 25s.

Prof. Villiger's text-book of nervous anatomy is well known both in its German and English editions, and has stood the test of time with success, for it first appeared more than 20 years ago and has had more than one review in our columns. Its conspicuous feature is its reliance as much on illustrative as on textual exposition. In the latest edition many changes have been made; there is a new section on the sympathetic nervous system, while additions to knowledge have been incorporated chiefly in regard to the cerebellum and brain stem. In view of the importance of the basal ganglia from the standpoint of nervous disease we do not think sufficient elaboration of their structure and connexions is given by Prof. Villiger. To describe only three nuclei in the optic thalamus is not enough; moreover, the relations of the corpus striatum with various small ganglionic collections in the midbrain and elsewhere should be set forth in greater detail. It is misleading, in our opinion, to describe corticofugal fibres passing by the corona radiata to caudate and lenticular nucleus; the substantia nigra is dismissed too briefly, and connexions of the corpus striatum with the nucleus of Darkschewitsch, inter alia, are ignored. As a general survey of neuro-anatomy, however, the book fulfils its avowed purpose.

*"Kinésie Paradoxale" des Parkinsoniens.* Contribution à l'Étude du Mecanisme de la Motilité Volontaire. By Dr. J. JARKOWSKI. Paris: Masson et Cie. 1925. Pp. 78. Fr.12.

THIS is an interesting little monograph worthy of attention from the neurologist. Briefly, it sets out to explain the curious variability in Parkinsonian rigidity. As has long been recognised, patients who suffer from paralysis agitans are often able at one time to perform an act which at another seems to be impeded; again, Parkinsonians can sometimes run when they are almost incapable of walking. The author endeavours to show that they suffer from a reduction of the "impulse" to move, which itself is a consequence of impairment of "affectivo-motor" reactions; these constitute the "proto-energy" of the individual, according to the author's expression. Should what remains of this "proto-energy" be sufficient on occasion to assert itself, the Parkinsonian can and will move; if an external stimulus be on occasion adequate, the same result will ensue. Thus the conclusion is reached that the impediment which he encounters is not merely mechanical, a consequence of a rigid voluntary musculature; there is a psychical or psychomotor component of equal or greater significance.

Somewhat similar views have been expressed by other research workers, notably by Kinnier Wilson in his recent Croonian lectures. The slender volume of Dr. Jarkowski can be recommended to all who are interested in the problems of motility.

## JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE. May, 1926.—A method of estimating in a scientific way permanent disability resulting from accidents is put forward by H. H. Kessler. He holds that functional disability, after the clinical condition has become permanent, must be accurately measured, personal opinion being quite unreliable. Mensuration is determined by such instruments as Martin's spring balance, and a description is given for applying the method to estimate loss of function of the component parts of the upper limb, the arm radicle, and the hand radicle. The article is of interest to all who are called upon to appraise compensation claims.—After investigating 331 persons exposed to lead risk, but not cases of acute lead poisoning, M. R. Mayers holds that lead anæmia is a blood disease entity, an anæmia of low secondary grade with stippling of red cells as a prominent feature, associated with other distinctive cellular changes. The ashen pallor depends on neurovascular capillary disturbance rather than on hæmoglobin content. The blood picture is of material assistance in troublesome cases of compensation.—A study of the relation of illumination to rapidity of post office work is described by J. E. Ives and E. Sydenstricker. First, two offices are contrasted, one (A) which worked entirely with artificial light, and the other (B) with good daylight for 40 per cent. of the time; in both artificial light had a high average value of 8·5 foot-candles. In all 2410 employees were examined with the following results (expressed as percentages), which indicate that the poorer illumination at A had an injurious effect on the eyes:—

| — | Both eyes normal. | Both eyes defective. | Inflammatory conditions. | Muscular unbalance. | Asthenopia. |
|---|---|---|---|---|---|
| A | 10·3 | 42·5 | 20·9 | 33·4 | 16·5 |
| B | 19·8 | 32·6 | 11·9 | 22·4 | 6·7 |

The defects increased with age and in order of greatest eye work, thus:—

| — | Under age 45. | | Over age 45. | |
|---|---|---|---|---|
| | Labourers. | Letter separators. | Labourers. | Letter separators. |
| Normality .. | 81·4 | 65·5 | 38·5 | 20·0 |
| Inflammatory conditions | 12·7 | 20·9 | 13·5 | 37·2 |

Various tests were carried out which showed that the rate of letter-sorting increased rapidly as light was increased from low illumination, but that as an illumination of 8 foot-candles is approached, the rate of increase rapidly diminishes until it attains a maximum beyond which increase of light has no effect. This study has opened up new ground and further problems which are now under investigation.

# Reports and Analytical Records.

## BEEFEATER LONDON DRY GIN.

(JAMES BURROUGH, LTD., CALE DISTILLERY, HUTTON-ROAD, LONDON, S.E. 11.)

GIN is a potable spirit flavoured with the volatile products of juniper berries and sometimes with those of other aromatic herbs. The spirit employed is usually from the patent still and is made from cereals. Gin is rarely adulterated and is probably one of the most harmless forms in which alcohol can be consumed. When "Beefeater" gin was analysed the following results were obtained:—

| | |
|---|---|
| Alcohol per cent. by volume .. | 42·7 per cent. |
| Alcohol per cent. as proof spirit .. | 74·75 ,, |
| Equivalent to .. .. .. | 25·25 under proof |
| Volatile acidity as acetic acid .. | 0·002 per cent. |
| Extractives .. .. .. .. | 0·016 ,, |
| Ash .. .. .. .. .. | 0·009 ,, |

| Secondary constituents | Mg. per 100 c.cm. of absolute alcohol |
|---|---|
| Volatile acidity as acetic acid .. .. | 4·7 |
| Fixed acidity .. .. .. .. | Nil |
| Furfural .. .. .. .. .. | Nil |
| Aldehydes .. .. .. .. .. | 2·0 |
| Esters as ethyl acetate .. .. .. | 12·1 |

These figures are normal for a good gin. "Beefeater" gin may be regarded as a sound unsweetened spirit of high quality.

## CARYPTON AND ANGOSTURA BITTERS.

(PREPARED BY DR. J. G. B. SIEGERT AND SONS, PORT OF SPAIN. SOLE CONSIGNEES: HENDERSON AND CO. (LONDON, LTD.), FINSBURY COURT, FINSBURY PAVEMENT, LONDON, E.C. 2.)

This preparation is mixed with crushed ice and consumed as a cocktail. When analysed the following results were obtained:—

| | |
|---|---|
| Alcohol .. .. .. .. | 21·8 per cent. by volume equivalent to 62 per cent. underproof |
| Total solids .. .. .. .. | 12·5 per cent. |
| Consisting of cane sugar .. | 10·8 ,, |
| Extractives .. .. .. | 1·7 ,, |
| Ash .. .. .. .. .. | 0·06 ,, |
| Volatile acidity as acetic acid .. | 0·05 ,, |
| Fixed acidity as citric acid .. | 0·30 ,, |

The alcohol used is derived from rum and the extractives other than sugar from various herbs indigenous to the West Indies. Quinine was tested for with negative results. "Carypton" has an agreeable odour and flavour. The slight bitterness is "clean" and does not remain on or clog the palate in the slightest degree.

Angostura bitters, which may also be regarded by virtue of the high alcohol content as a liqueur, were first introduced in 1833 by J. H. G. Siegert, of Venezuela, and are said to have been brought to Europe in 1830 by von Humboldt, the explorer. The bitters are commonly supposed to be compounded of angostura bark (cusparia), chamomile, cardamom, cinnamon, orange peel, raisins, alcohol, and water, of which the first mentioned contains small amounts of alkaloids. On analysis the following results were obtained :—

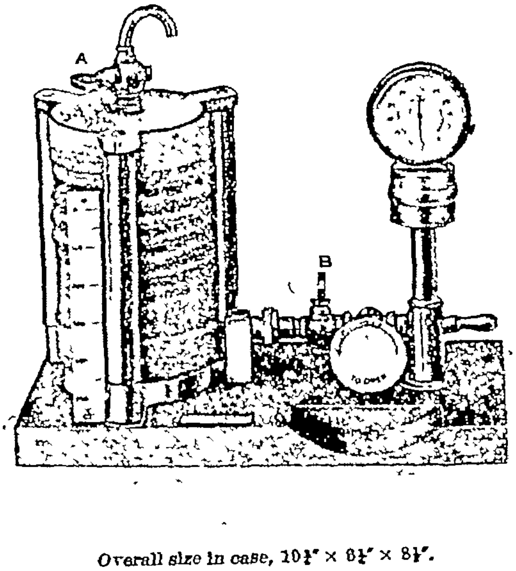
| | |
|---|---|
| Alcohol by volume .. .. .. | 48 per cent. |
| Equivalent to .. .. .. | 15·0 under proof. |
| Total solids .. .. .. | 0·53 per cent. |
| Water .. .. .. .. | 45·30 " |
| Ash .. .. .. .. .. | 0·10 " |
| Volatile acidity as acetic acid .. | 0·007 " |
| Fixed acidity as citric acid .. | 0·06 " |
| The total solids consist of— | |
| Cane sugar .. .. .. | 5·0 " |
| Extractives not sugar (resins, alkaloids, &c.) .. .. | 1·53 " |

The preservatives, salicylic and benzoic acids, were absent. Quinine was tested for with negative results.

# New Inventions.

## A PORTABLE PNEUMOTHORAX APPARATUS.

THE pneumothorax apparatus here illustrated has been designed to meet three conditions: (1) absolute portability, there being no fluids in any part; (2) simplicity of manipulation, the instrument can be controlled with one hand all through the operation; (3) the air or gas is under constant pressure at all times, and can be introduced into the patient's chest at any desired pressure up to 25 cm. of water. The apparatus consists of a collapsible bellows made of double-lined rubber canvas, supported by three guides, and arranged so as to fall steadily under the weight of a metal cap attached to the tubes which slide over the three guides. A graduated scale shows the amount of air at any moment in the bellows, which when full hold approximately 500 c.cm. A tap is placed on the top of the bellows for the purpose of filling them with air, or any gas desirable, whilst at the base is the outlet which leads the air or gas through a second tap and a reducing valve. A manometer is fixed at this point which is in direct connexion with the pneumothorax needle. The insertion of a second manometer between the bellows and fine adjustment valve is not really required, as the air in the reservoir is under constant pressure. A simple air filter is placed between the manometer and the needle. In use the tap B is closed and the tap A opened. The bellows are raised by the hooked tube until the stop is reached. The tap A is then closed. This can be easily performed with one hand, and can be repeated as many times as desired during the operation. The reducing valve between the tap B and the manometer is then closed, and the manometer adjusted to zero. The needle is then inserted into the pleural cavity, and as soon as this is reached a good oscillation of the needle on the manometer dial will be noticed. The tap B is then opened and the reducing valve is *very slowly* unscrewed, until an increase in the mean of the oscillation of the needle is noticed. This indicates that the air or gas is flowing from the bellows into the pleural cavity. The amount of air desired is allowed to pass into the patient's chest, and then tap B is closed, and a reading of the intrapleural pressure obtained. If it is insufficient the tap B is opened again, and the rate of the flow of gas or air adjusted by the reducing valve. If more air is required than the capacity of the bellows, the tap B and the reducing valve are closed, tap A opened, and the reservoir filled as before. A good knowledge of the flow of air can be readily obtained by noticing the rising mean pressure registered by the manometer. This latter part of the apparatus has been found very reliable, but for safety it can be easily tested against a water manometer every month. The instrument possesses a distinct advantage over former water-syphon types, in that the pressure of the air or gas emitted from the reservoir does not decrease as the operation proceeds and can be completely controlled by the reducing valve.



Overall size in case, 10½″ × 8½″ × 8½″.

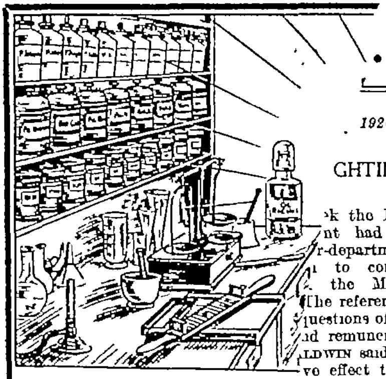
The complete instrument is manufactured by Messrs. Philip Harris and Co., Ltd., Birmingham.

FREDERICK HEAF, M.D. Camb.

## A NEW TEST FOR THE LIGHT SENSE.

LIGHT minimum tests are valuable in such diseases as retinitis pigmentosa, luetic retinitis, hereditary night blindness, and generally speaking in diseases of the retina or choroid as distinguished from those in which the *conducting fibres of the optic nerve* are impaired. Lowered ability to recognise the proper threshold value of light is due to damage to the perceptive rods of the retina, whereas when the patient's statements in the light difference test are appreciably at variance with the law of Fechner, then the conducting power of the optic nerve is impaired. In many chronic cases of secondary optic atrophy the values of both the light minimum and the light difference are considerably removed from the normal values in the same patient and at the same time. Eighteen months ago I devised an apparatus for the accurate determination of a patient's sensitiveness to light *increments* superimposed upon the initial source of an illuminated area. The apparatus in its original form was rather cumbersome, but the construction has now been simplified so that only one source of light is necessary, and the use of filters has been dispensed with. The optical system used gives a definite comparison between two areas of light, made apparent to the patient by interposing different stencils of various letters. The special diffusing screen gives *true definition at an angle of 15° either* side of the normal. The percentage increase of intrinsic brightness is indicated by black figures on an illuminated background at the side of the instrument discernible to the operator only. A shutter cuts off the main illumination to enable the light minimum by comparison to be obtained. The instrument, which is made by Mr. Clement Clarke, 16, Wigmore-street, London, W. 1, has been tested against Lummer Brodhan standard photometers.

GRAYDON HUME, M.B., B.S. Lond., D.Ophth. Oxf.,
Chief Clinical Assistant, Eye Department,
Guy's Hospital.



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has aggravated the hardship of existing officers. But real injustices exist. Figures can be brought forward, for example, to show that after the war the alterations in pay for the officers of the R.A.M.C. were not comparable to those made for officers in the line regiments, a repercussion of the old mental confusion between the situation of the gentleman cadet entering his corps to receive his training at the expense of the State and the medical officer joining a Service after five or six years of intensive professional training conducted at private expense. Quite rightly the commencing pay of the latter was fixed at a higher rate than that of the former, but the reason for this was lost sight of when, as an excuse for not improving the salaries of medical officers to the extent that the salaries of the officers of the line were raised, it was put forward that the former were already in receipt of better pay.

We are informed that the recommendations of the Departmental Committee to which effect is now to be given in the expected Orders deal substantially with the whole situation along the lines put forward by Sir WILLIAM LEISHMAN, and advocated by the British Medical Association in their evidence before the Committee. There will be considerable increases of pay to the middle ranks, equalisation of specialist pay, and some redress of the unfair reduction of pensions, made apparently in breach of contracts which were in force between the State and the officers concerned. That the occurrence of such breaches should be viewed with apparent equanimity in high places has formed a critical episode in a long story of effort for redress. We may look forward under the new conditions to fine results. Those who grasp promptly the opportunities now offered will reap the advantage of early promotion in return for meritorious work.

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## PROTEIN SHOCK THERAPY.

LONG before the discovery of anaphylaxis and the consequent awakening of interest in the workings of protein shock, WAGNER-JAUREGG in Vienna was injecting proteins into the blood of general paralytics and satisfying himself of a measure of therapeutic success in so doing. Starting from an old clinical observation that an attack of fever might be beneficial in certain types of psychosis, he was seeking the most suitable method of producing it artificially. Finally, abandoning the proteins of commerce and dead bacilli, he hit on the parasite of benign tertian malaria and elaborated the malarial treatment of which so much has been heard. His colleagues in Vienna are still working on this remedy, the mechanism of which is obscure, for in spite of their efforts no evidence has been brought forward to establish the malarial toxin as having any specific effect. The success of protein shock therapy with the group of chronic nervous diseases has encouraged its trial with other intractable maladies. In an article which appears in our present issue, Dr. W. YEOMAN records an application of non-specific protein injection to old-standing cases of arthritis in the Royal Bath Hospital at Harrogate, and summarises previous work on the same lines carried out for the most part in Germany and America. In these rheumatoid cases various kinds of protein stimulation have been tried including veal protein, horse serum, the secondary proteoses of milk, and various bacillary vaccines. Dr. YEOMAN himself has come back to the antityphoid vaccine, introduced by ICHIKAWA 1912, using stock TAB vaccine for the reason t ample experience of the immediate and remote eff of this antigen has accumulated during the last 20 years. All observers seem to agree that little benefit is effected unless a sharp febrile reaction is obtained, the hyperthermia apparently having a direct stimulating effect on the formation of antibodies. With TAB vaccine skilfully applied a sharp febrile oscillation may be induced with a peak at 104° F. or above, followed by profuse perspiration, an early leukopenia giving place to a steep rise in the leucocyte count as the temperature falls. Some mental excitement and confusion may occur, but no other complications have attended the course of injections. A patient with experience of both regarded the TAB reaction as a trifle compared with the malarial chill. Immediate improvement was observed in 80 to 90 per cent. of all types of arthritis submitted to a course of TAB vaccine, the relief being maintained in 50 to 60 per cent. of the cases. Moreover, Dr. YEOMAN has been able to eliminate two groups of arthritics who do not respond, and so to limit the prospect of unsuccess. His results, it should be added, have been confirmed by other members of the staff of the hospital who have supplied him with cases for the purpose.

Into ophthalmic practice, too, protein shock therapy has lately been finding its way. In 1911 RÖMER used autohæmotherapy against gonorrhœal conjunctivitis, employing the principle, demonstrated by ECKART in 1894, that injected or transfused blood acts as a chemical stimulant. This reaction, to which WIDAL has attached the name colloidoclastic shock, includes a fall in blood pressure, leukopenia followed by leucocytosis, diminished viscosity, and delayed coagulation of the blood. In the latest edition of his text-book on diseases of the eye RÖMER records the experience of German ophthalmologists that protein injections may cut short the inflammatory reaction in gonorrhœal infection of the eye. Dr. H. F. SHORNEY,[1] ophthalmic surgeon to the Adelaide Hospital, now advocates cow's milk injected into the gluteal region, quoting German and Russian work in support. The technique is simple and the results encouraging. An important application has been found in gonococcal ophthalmia, but inflammation of the uveal tract has responded to the treatment, and Dr. SHORNEY believes that the use of milk injection will abolish the risk of sympathetic ophthalmia after perforating wounds of the globe. While it will not as a rule counteract panophthalmitis, it will generally avert the spread of infection after cataract extraction, when the wound has become infected. Dr. SHORNEY sterilises the milk by boiling for four to five minutes and injects from 2–15 c.cm., according to the patient's age, with a long needle. The temperature rises five to eight hours later. The dose is repeated next day if the reaction is insufficient, and on the fourth and fifth days in serious cases. The essential similarity between Dr. SHORNEY'S treatment and WAGNER-JAUREGG'S is obvious. Both inject a foreign substance with the object of producing a fever which stimulates the defensive mechanism of the body. Both are to be regarded, in the absence of more exact knowledge, as an elaborate protein-shock treatment. So long as physiologists can tell them so little about what actually happens, many clinicians may hesitate to employ such treatment except as a desperate measure, where all else has failed. We look to the biochemist to provide us with the knowledge by which the scope of this remedy may be defined and enlarged.

## SOCIAL HYGIENE AND PSYCHOLOGY.

THE annual general meeting of the British Social Hygiene Council was held on Wednesday, June 16th, Mr. E. B. Turner presiding. The annual report, which was adopted, reviewed the Imperial and medical aspects of the far-ranging work undertaken. The revenue account still shows a tiresome excess of expenditure over income, though substantial donations were received during the year ending March 31st, 1926, and grants towards administrative expenses were made by the Ministry of Health, the Colonial Office, and the London County Council. The reason for this is that under £500 were received in subscriptions, a position which does not reflect favourably on the generosity of the public, considering the many and great public benefits which can be traced directly or indirectly to the activities of the Council. When the report is able to show that the proportion of syphilis to gonorrhœa in the civil population is nearly approximating the proportion observed in groups of men under discipline in branches of the Services, we can realise what organisation is doing for civilian males, while there is no evidence that the incidence of gonorrhœa is higher among women than among men, despite the distressing existence of ophthalmia neonatorum. Earlier in the week Mr. Turner had presided over a conference of the Council, held at Leicester, to consider steps to be taken for the prevention of congenital syphilis, and urged that the Wassermann test should be applied to expectant mothers as a matter of routine and not necessarily at V.D. clinics. This suggestion was supported by Dr. Norman Cruickshank, who thought that an early blood test should be made always in obstetrical institutions, and the value of antenatal clinics in respect of the hereditary disease was pointed out by other prominent physicians. All this speaks clearly for the great value to the community of the Council's work.

The Council has issued the first number of its quarterly journal, *Health and Empire*, and only of recent years has it been possible for the problem of venereal disease to be frankly discussed as is done by the writers in this publication, who have no hesitation in coming to grips with reality. Mr. Cyril L. Burt, D.Sc., writing on the Contribution of Psychology to Social Hygiene, shows how the psychologist, quitting his books and his papers, now tests and analyses his fellow human beings and thus comes into relation with those intimate matters of individual life underlying the social problem that has led to the formation of the Social Hygiene Council. Dr. Burt points out that there is a notion that psychology has lately become engrossed in matters of sex, but he believes that it would be misleading to consider that particular set of social problems, to which the sex instinct has given rise, in separation from the rest. Mental mal-adjustment springs from abnormal sex relationships, but abnormal sex relationships may arise out of mental mal-adjustment. His position seems to be that, as a psychologist, he studies the workings of all the instincts, including that of sex, with the same untrammelled objectivity that science has, after much conflict, achieved in other spheres; and one must admit that an understanding of the problems of behaviour that complicate the control of venereal disease can scarcely be obtained by any other method of approach. He succeeds, moreover, in making clear the need for the psychological method in the study of social problems of whatever sort. Starting with the early influence of the home surroundings, he claims that, in both juvenile delinquency and those cases in which the breakdown is rather "nervous" than moral, an analysis of the mental history most often leads to a story of disturbed emotional relations with one or more members of the family. Any child who has not been a normal member of a normal household is likely to grow up gravely handicapped for future social life, and here he finds a profound reason for maintaining the integrity of the family as an essential factor in society. Mentally abnormal children he would class as the intellectually and the emotionally defective. The latter correspond partly with what are termed "moral imbeciles," and probably include a large proportion of future neurotics and lunatics, and certainly a considerable number of the most serious delinquents and incorrigible criminals, so that their early recognition is a necessary step of social hygiene. In juvenile delinquency Dr. Burt sees reactions arising from universal human instincts which cannot be stamped out or annihilated by summary attempts at suppression, but must be given rational and lawful outlets. The "moral sense" is not inherited but acquired, and there is no evidence that criminality or immorality as such is handed on by direct biological transmission. The mental defective cannot be cured, but the so-called moral defective very often can.

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[1] Protein Therapy in Affections of the Eye. Med. Jour. of Australia, Feb. 13th, 1926.

The psychological investigation of an individual can succeed only if the subject has full confidence in the investigator, and a rule of technique is that the latter must express no moral judgments. The operation of cause and effect must, however, be freely recognised, and it is on these principles that Dr. Burt, when he comes to deal with prostitution, studies both the individual and the subject. He sees a change in the social tradition by which either the sex habits of women in the future will approximate to the sex habits of men in the past, or a new sex control among the men will approximate to the former self-restraint of women; but he believes that in the long run there will be a diminution in crude activities of a licentious kind and that prostitution as a mercenary calling will die out. There is a hopeful corollary to the psycho-analytical view that a vast number of wholesome social activities derive their strength from sex emotion; Dr. Burt believes that, just as society has, save for a few exceptional outbreaks, mastered the acquisitive and pugnacious instincts, so we must seek by a full and candid recognition of the sex instincts to direct their energy into other paths instead of trying to deny their existence or to trample them out. Whether Dr. Burt's views are fully accepted or not, the appearance of his article marks a recognition of the part that modern psychology plays in the understanding of some of the most perplexing social problems of the day, and it is to the credit of the British Social Hygiene Council that such large reflections should reach the public.

## HOSPITAL SUNDAY FUND.

Hospital Sunday falls to-morrow, June 27th, when in churches, chapels, and places of worship generally the congregations will be asked to recognise by their offerings the claims of the metropolitan voluntary institutions, the great hospitals, the lesser and special hospitals, and other domiciliary adjuncts to the treatment of the sick. The pecuniary needs of all these require no emphasising; despite the marked improvement of recent days in the incomes of certain of the larger voluntary establishments, an ever-pressing want of money is caused by a steadily rising call for assistance. The modern endeavour to avert and eliminate disease by preventive treatment has brought with it new burdens, and these burdens have been aggravated by the prevalent unrest in industry. The Metropolitan Hospital Sunday Fund has distributed among the charitable institutions of the metropolis over three millions sterling since its inception, and the cost for the collection and administration of this vast sum has been estimated at under 4 per cent.—a triumph of efficiency as well as a grand testimony to a huge mass of unpaid labour. And during the 54 years of the Fund's existence the scope of the hospitals has responded nobly to the wider demands upon them, for within their walls they have furnished to vast sections of the population treatment based upon the highest developments of medical science throughout a period which has been fruitful in the acquisition of knowledge and in its application.

# Annotations.

"Ne quid nimis."

## THE ANTI-CANCER CENTRES OF FRANCE.

Since the war France has made an effort on a considerable scale to deal more effectively with cancer among its population. Largely as the result of the efforts of the late Prof. Bergonié, anti-cancer centres have been formed with the threefold object of serving as foci of treatment, research, and teaching. Dr. Malcolm Donaldson and Prof. S. Russ, who recently visited the chief of these centres on behalf of the Medical Research Council, have made a report to the Radiology Committee of the Council from which it is possible to gauge the magnitude of this national effort and perhaps to draw some inference of its bearing upon that which other nations may feel impelled to undertake. There are seven anti-cancer centres in Paris and the immediate neighbourhood, and 11 in the provinces; the chief provincial centres are at Strasbourg, Lyon, Marseille, Montpellier, Toulouse, and Bordeaux, all of which were visited. Besides these centres there is the Centre Regional in Paris, presided over with such success by Prof. Regaud. The policy adopted at the provincial centres has been to construct new premises or make use of existing ones for the work in question and to appoint as director of the centre a surgeon, a radiologist, or a pathologist. The centres have all been supplied with radium, often in considerable quantities, and with X ray plant capable of giving penetrating radiation; in fact, special work in radiotherapy is being most energetically developed at these centres, as the chief therapeutic measure other than surgery. There is a close affiliation between the work of these centres and that of the Fondation Curie of the Institut Pasteur, of which Prof. Regaud is the director, and it is probably not too much to say that, though the inspiration for the formation of the centres came from Bergonié, the genius of Regaud is the main directing influence of the radiotherapeutic investigations being carried on all over France. The full results of this effort must be awaited, but it will surely make itself felt in the developments of new methods of radium therapy and in reducing cancer mortality. Clinical investigation in cancer cannot be hurried; the lapse of time is essential in evaluating the results of any therapeutic measure, but it can be helped by providing men and money. For the last four years the Medical Research Council has been carrying out such investigations at a number of medical centres; the results obtained seem to prove that, though radium is a valuable therapeutic agent in the treatment of cancer, its full potentialities are not yet developed. It may be that an effort on an even bigger scale will be necessary before a rigid determination of its utility is possible or before the technique is so standardised as to be made generally available to medical men throughout the country.

## LEAD POISONING FROM MOTOR SPIRIT.

Considerable attention has recently been paid in America to a new health hazard arising from the introduction of tetra-ethyl lead into petrol used in motor-cars. The lead contents escape, after explosion, with the exhaust gases in the form of fine lead dust. This liquid compound of lead is added to increase the explosive power of petrol vapour—a matter, fortunately for us, of greater importance for American than for British engines. Possibly here lies the reason why in this country we have not so far h to fac
the resulting hazard. Ethyl petrol,
first 1 part of tetra-ethyl lead to 1
later 1 part to 1300, was placed on s
in February, 1923. Serious cases of p
among men handling tetra-ethyl lea

petrol; hence its sale was voluntarily discontinued in May, 1925, awaiting the report of an expert committee. Careful and scientific investigations were undertaken in which car drivers using ordinary petrol were compared with drivers using the ethyl fluid, garage workers only handling ordinary petrol were compared with those handling the ethyl fluid, and all were compared with workers exposed to a known lead risk in factory employment. The text giving details of the inquiry, tables summarising the observations, and the report of the committee, have now been issued[1] by the United States Public Health Service. The report is reassuring inasmuch as no decisive clinical indications of lead poisoning due to ethyl fluid were brought to light, even though the garage men appeared to be absorbing definite small amounts of lead. Possibly these men experience a special exposure from the dust of garages, which was found to contain from 0·8 mg. to 22·3 mg. Pb per gramme of dust. The committee find no good grounds for prohibiting the use of ethyl motor spirit of a composition of 1 part to 1300, so long as its distribution and use are controlled. Immediately upon issue of this report tentative regulations for governing the manufacture, distribution, and use of tetra-ethyl lead have been submitted to the health officers of the various States for consideration, and they may be expected to be finally adopted at an early date. Meanwhile, we may hope that in this country the prevailing type of British motor engines will be maintained and that no need may arise for subjecting the public to a new and somewhat disconcerting health risk.

## STAPHYLOCOCCAL SEPTICÆMIA.

IN an interesting paper upon staphylococcal septicæmias which appears in a recent issue of the *Presse Médicale* (May 15th), Drs. P. George and H. Giroire, who have observed a number of cases of the condition during the last year, state that in most medical text-books two clinical types of this infection are recognised. First, a "typhoid" form, without special localisation in any organ, in which the diagnosis can only be made by blood culture, and secondly, a subacute form with pyæmic features. For their part the authors have met with two clinical types of generalised staphylococcal infection, in one of which the main localisation of the organisms is upon the heart valves, and, in the other, the infection is a facial one which they term the "erysipelatoid form." The first of the above types of the disease, which occurs principally in adults, commences with general symptoms and may be thought to be an influenzal infection, but the condition rapidly worsens and admission to hospital is usually sought in four or five days. At this time the patient is seriously ill and though splenic enlargement is present does not show any definite localising signs. There are, however, certain cutaneous alterations which the writers consider highly specific. These are of the nature of ecchymotic or petechial spots, which may occur over any part of the surface, and small bright red areas of about the size of a lentil situated especially upon the face and upon the extremities, which become vesicular and finally pustular and which upon bacteriological examination are found to contain staphylococci in pure culture. These are embolic lesions and sections show the capillaries of the underlying skin choked with masses of the organisms, whilst blood cultures give a pure growth of staphylococcus aureus. The patient progresses from bad to worse and death, which is often preceded by coma and hyperpyrexia, takes place usually within a week of the onset. At post mortem, examination shows the presence of an acute endocarditis usually involving the mitral valve alone and a certain number of embolic lesions in the lungs or internal organs. The authors consider that the symptomatology and the cutaneous lesions are characteristic and enable a definite diagnosis to be made prior to the results of blood culture being known. The lesion of the mitral valve is usually not sufficient to give rise to definite physical signs. The second clinical type here described which the infection may take is that in which, following upon a furuncle in the region of the bucco-nasal fold, a phlegmonous inflammation supervenes which involves on the affected side of the face the upper lip, nose, and orbital region. Severe general symptoms appear, blood culture is positive, exophthalmia may occur from involvement of the cavernous sinus, and death takes place within two or three days of the occurrence of general symptoms. This association of symptoms is termed by the writers the "erysipelatoid form" of the disease, chiefly on account of the diffuse inflammatory infiltration which develops around the primary site of infection, but its general resemblance to erysipelas seems but slight. At the same time the authors appear to imply that recognition of this condition as one of the forms which a staphylococcal infection may take has been wanting. This is certainly not the case, for in English surgical writing and teaching, and we can hardly think less so in France, the possible grave effects of a septic focus in the region of veins inosculating with the ophthalmics, and through them septic thrombosis, involving the cavernous sinus in the same process, is well known. The other condition of acute septicæmia associated with endocarditis is not as well known and does not seem to be a common occurrence in this country.

## INNOCENT AND MALIGNANT TUMOURS OF THE INTESTINE.

WHETHER or not the parenchyma of innocent tumours is more liable to develop malignant characters than non-neoplastic cells has long been a subject of debate among pathologists and surgeons. There is plenty of evidence to show that a carcinoma may develop in an adenoma, or a sarcoma in an innocent connective tissue tumour, but it is difficult to prove that the malignant cells are actually derived from those of the innocent neoplasm, that they are, as it were, a later stage in what is essentially a single process. It is common knowledge that innocent and malignant tumours frequently coexist side by side, but many authorities deny that this is more than a coincidence. And inasmuch as the vast majority of carcinòmata arise directly from epithelia without any intermediate adenomatous stage, it is clear that the assumption of malignant properties by the cell may be quite abrupt. One thing, however, is certain—namely, that the malignant process may originate simultaneously or nearly so in several parts of an epithelial area. It was demonstrated many years ago that an apparently single carcinoma of the tongue may in reality consist of a mingling of two or more independent and distinct tumours. Sir Lenthal Cheatle has demonstrated the same multiple origin in rodent ulcers, and a similar process has been shown to occur in the development of tar carcinomata in mice. Now Dr. Cuthbert Dukes analyses the same phenomenon,[1] this time as it occurs in the large intestine. For a long time it has been recognised that simple tumours of the mucosa of the large bowel are often followed by the development of carcinomata; especially in this prone to occur when the intestine is the seat of multiple papillomata. Dr. Dukes has made an extensive and careful study of these lesions, and has brought to light some very interesting points. In the complete large intestines of 127 persons dying from diseases other than cancer, single or multiple adenomata were found in 12 cases (rather less than 10 per cent.), but in 33 successive intestines affected with carcinoma such adenomata occurred in 25, or 75 per cent. Inasmuch as in the malignant cases only the small portion of intestine removed along with the tumour by operation was examined, the difference is even greater than would appear. Investigating these tumours anatomically, Dr. Dukes finds that in the early stages they are usually multiple, though fusion of neighbouring foci of proliferation may in the later stages give rise to an apparently single growth. Moreover, at the margin or neck of the adenoma the adjacent epithelium presents pronounced chronic inflammatory changes. In course of time malignancy supervenes in these irritated cells, as well as in the cells of the adenoma itself. Dr. Dukes suggests that a cancrogenic agent causes a more than usually vigorous growth in many separated spots in a considerable area of mucous membrane. Later, a crop of adenomata arise from this sensitive field, and some of these become surrounded by secondary tumours. The mucosa between these primary and secondary tumours becomes irritated, hampered in its growth, and folded inwards. Whether the malignant change develops in these dislocated cells or whether in the cells of the actual adenomata is uncertain, but the cancer makes its appearance when a crop of simple tumours has arisen in an irritated field and in close association with one of them. The author's conclusions are supported by excellent figures and diagrams, and his article is as convincing as it is interesting.

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[1] Journal of Industrial Hygiene, May, 1926.

[1] British Journal of Surgery, vol. xiii., No. 52.

## RESEARCH IN BREWING

BREWING, like the agriculture of to-day and the medicine of yesterday, is one of those ancient crafts which the patient labour of the scientific investigator is slowly raising from the status of an empirical art to that of a science. It is to the credit of the brewing trade, at a time when many industries are accepting or seeking help from some outside source, that its own Institute has financed a research scheme by a system of voluntary contributions based on output from nearly 300 firms. Results of considerable technical and scientific value appear in the fifth annual report of the Institute of Brewing Research Scheme, covering the period April, 1924, to April, 1926, which has just been issued. Beer needs for its manufacture four main ingredients—water, barley malt, hops, and yeast—and each of these materials forms the chief subject-matter for investigation by the four subcommittees of experts. Until the Institute shall have appointed a director-general of research the chairman of the Research Fund Committee, Mr. J. S. Ford, F.R.S.E., is acting in that capacity. Field experiments, carried on all over England on the influence of soil, season, and manures on the yield and quality of barley grown for malting, are supervised by Sir John Russell, F.R S., director of the Rothamsted Experimental Station. After malting the analytical work is in the hands of Mr. H. Lloyd Hind, whose results promise well for both farmer and brewer. Investigations on hops comprise the systematic breeding and crossing of new varieties at the South-Eastern Agricultural College, Wye, by Prof. E. S. Salmon, and their testing at the East Malling Research Station and at Horsmonden. The objects in view are to procure for the grower new and prolific varieties of hop more able to resist disease, while at the same time securing for the brewer the qualities he considers valuable. Chemical investigations on the preservative and antiseptic properties of hops have engaged the attention of Prof. F. L. Pyman, F.R S., and Dr. T. K. Walker at Manchester since 1921. It may not be generally known that apart from the agreeable flavour conferred on beer by hops, they are a valuable ally to the brewer in his fight against the invasion of his beer by the foreign organisms which cause turbidity, fret and acidity. Valuable work is being done on the keeping properties of the yeast used for fermentation and the effect of hydrogen-ion concentration on the character and stability of beer. The measurement of the true "free acidity" is becoming recognised as an essential procedure in the various stages of brewing. Over and above the actual staff of the Institute a large body of farmers, brewers, chemists, maltsters, and hop-growers—all busy men—voluntarily give their services on numerous committees supervising the researches, while expert technical assistance is engaged where required. It should not be forgotten that it was on the basis of Pasteur's researches on the disease organisms of wine and beer that arose the superstructure of modern surgery and preventive medicine.

## FLUORINE AS A SLOW POISON.

THE toxic effects of long-continued small doses of iodine and bromine and their derivatives are well known. Recently Prof. H. Cristiani has described[1] chronic poisoning by another member of the halogen series, fluorine. This element is apparently present in minute quantities in many of our foodstuffs, and was at one time frequently used as a preservative, although its use as such is now prohibited in most countries. In the neighbourhood of certain factories the food of animals may contain toxic quantities of fluorine, and this element may also be present in excess in water into which certain industrial products have been allowed to pass. In some districts in Switzerland where these conditions are present an endemic disease occurs among animals, characterised by wasting and cachexia, with a special localisation in the regions of the vertebral column and lower limbs, while the bones become softened and frequently show spontaneous fractures. On account of this last symptom the disease has usually been considered by veterinarians as a form of osteomalacia, and farmers and others seeking compensation for their diseased cattle have been met by the statement that there is no evidence that osteomalacia can be caused by the ingestion of poisonous substances. Prof. Cristiani has set himself to disprove this, and he has established that the disease from which these animals suffer can be separated from true osteomalacia and should be designated by a separate name such as "fluorism" or "fluorine cachexia." His experiments consisted in feeding animals on diets which, while maintaining perfect health in control animals, produced the syndrome described above when there was added in small doses (*a*) hay which was suspected of having produced the disease in cattle; (*b*) hay mildly impregnated with certain salts of fluorine, or (*c*) grass submitted to the action of fluorine in one of its gaseous forms and used either fresh or as hay. The time of appearance of symptoms was variable and depended to a certain extent on the dose of fluorine employed. The experimental animals wasted and eventually died with symptoms of bulbar paralysis and respiratory failure. At autopsy the bone-marrow was found to be extremely scanty; the bone-tissue showed much rarefaction, and the bones on analysis showed a high fluorine content. Prof. Cristiani is at present studying the question as to whether chronic fluorine poisoning occurs in man. Its symptoms are so slow in appearing and in progressing that it may possibly be present sometimes among the inhabitants of industrial areas where much fluorine is produced.

## THE PATHOLOGY OF BURNS.

THERE was for a long time a good deal of difficulty in explaining the toxæmia and death which may follow burns, and it is only comparatively recently that our knowledge of the subject has determined to a satisfactory explanation which brings the ill effects of burns into line with the shock due to tissue injury. The evidence, along with an interesting discussion of burns of all kinds, is well summarised by Dr. G. T. Pack in the *Archives of Pathology and Laboratory Medicine* (1926, i., 767). In the first place, it is clear that the poisonous substance comes from the burned tissue and is carried in the blood; if the tissue is excised toxæmia is prevented, and if burned skin is t
planted from one animal to another the lat
symptoms and dies. If one of a pair of
Siamese twins is burned, both have
experiments with crossed circulatior

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[1] La Presse Médicale, April 14th.

animal which is poisoned is the one in which the blood from the burned tissue circulates and not the one of which the burned tissue forms a part. In the second place, it has been shown that the poison is not generated in the process of burning but subsequently. Symptoms in man do not appear till, perhaps, 24 hours after the actual burning, and if parabiotic twin animals are separated within 12 hours after one has been burned the other does not develop symptoms. The facts are strikingly in accord with those by which Cannon, Dale, and others have shown that secondary shock is due to the absorption of histamine and similar bodies which arise in the disintegration of smashed-up tissues. They also give a satisfactory explanation of why the danger of a burn depends more on its surface area than its severity. The poisonous products of autolysis do not come from the tissues which are thoroughly destroyed—charring or anything near it breaks them up beyond the possibility of that—but from the tissues in the next zone where the cells are killed by heat but not actually burned. These dead cells autolyse and break up; this takes some time and explains the delay in the onset of symptoms. And it is evident that a severe carbonising burn does not necessarily produce more dead cells capable of a poisonous autolysis than a comparatively superficial lesion of the same surface area. The dangerous tissues are those which have been heated just enough to kill them without destroying the autolytic ferments or causing much chemical decomposition.

## THE ROYAL SOCIETY CONVERSAZIONE.

The deferred annual conversazione given by the Royal Society was held at Burlington House on June 16th, when leading scientists took the opportunity offered to display the results of their investigations, and a very large circle of interested visitors was enabled to gain an insight into recent developments of scientific inquiry. The majority of the exhibits shown on this occasion related to problems in physics, some of them of direct interest to radiologists. Prof. O. W. Richardson showed an apparatus for the investigation of soft X rays varying in wave-length from about 20 to 400 Angström units. For this purpose a highly exhausted X ray tube of transparent silica was excited by constant potentials of from 300 to 600 volts. Owing to the low penetrating power of the rays produced by these voltages, the means for measuring them was incorporated in the tube. A series of photographs of $\beta$ ray tracks produced by X rays in different gases was shown by physicists of Victoria University, Manchester. These tracks may be divided roughly into two groups according to their length. The long tracks are due to electrons ejected from atoms which have absorbed a quantum of X rays, whilst the short ones are supposed to accompany the process of scattering by matter. Of these two phenomena the latter is of more importance in light gases and is one which will probably engage the attention of radiologists in the near future. Radiography was represented by a series of plates taken at the Royal Arsenal, Woolwich. A radiograph showing a cavity 0·3 in. wide in a piece of steel 4½ in. thick, served to illustrate the high penetrating power of the X rays which may now be produced and of the differentiation in density which is possible with them. A number of electrical instruments for physiological research were shown by Mr. A. C. Downing, who has determined the heat values for muscle and nerve actuated by a variety of stimuli. An exhibit of Mr. T. S. P. Strangeways and Dr. H. B. Fell marks an advance in tissue culture, shown by the development in vitro of the isolated eye of the embryonic fowl. For these experiments one eye dissected out from a fowl embryo of 64 to 70 hours' incubation was explanted into a medium composed of fowl plasma and embryonic tissue extract, whilst the other eye served as a control. The specimens exhibited showed the growth of the lens, the formation of pigment, the differentiation of the iris and the development of the reticular, ganglion cells, nuclear and "rods and cones" layer of the retina. The eyes under cultivation were thus seen to grow in a surprisingly normal manner. Of historical interest was an early microscope of the Leeuwenhoek type and possibly the only example of its kind in England. The instrument was made by Butterfield, who, in 1678, communicated to the Royal Society a paper on the Making of Microscopes with Small Single Glasses. The instrument shown was made of silver and consisted of one lens and a movable pair of forceps for supporting the specimen under observation. A microscope of this type was used by Leeuwenhoek for most of his classical work.

## BELATED HOSPITAL REPORTS.

It is an old complaint that Government reports and statistics are published so long after the dates to which they refer that their usefulness is much diminished. Similar disabilities are inflicted in full measure upon those who, of necessity or from inclination, are concerned with hospital affairs and hospital figures. A few days hence the first half of 1926 will have passed, yet we are still receiving hospital reports for the year ending Dec. 31st, 1925, provincial newspapers are still reporting belated annual meetings, and similar things will happen for some time to come. We are well aware that hospital staffs, medical and lay, are always pressed with work; but an annual report is part of that work, and it is not more arduous to undertake it in January than in March or April, or even later. It cannot often chance that important material is unavailable for many weeks or several months after the end of the year, and we are quite sure that it is difficult to avoid languor and weariness when dealing with facts and figures which lapse of time has robbed of their freshness. Moreover, the student of these reports and statistics has an uneasy sense that he is conning ancient history and that his reflections and conclusions may be to a greater or less extent vitiated by delay and the emergence of new circumstances. Once upon a time these delays were of comparatively small moment, but to-day hospitals are the most outstanding fact in the domain of public health. They are watched more carefully than ever before; since the war the number of people interested in their individual fortunes and in the voluntary system generally has enormously increased, and it would seem to be only businesslike prudence to publish the results of their year's work as speedily as possible. The reports issued by many of the larger hospitals are volumes of real scientific, social, and statistical importance, and it is much to be regretted that information of obvious comparative value should be withheld both from specialists and the general public until it is growing stale and, perhaps, halfway towards being superseded by later experience.

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Glasgow Royal Infirmary Auxiliary Hospital. The pressure upon the wards and the long waiting list have made it imperative that an auxilliary hospital should be established at an early date. Some time ago Mr. James Macfarlane, the chairman of the board, and his brother, Mr. George W. Macfarlane, provided a site of 22 acres at Canniesburn, some five or six miles outside the city. The trustees of a recently deceased testator have now given £10,000 to the cost of building; a similar sum was given last year by Miss Margaret Clarke, the daughter of a former Glasgow physician.

A Garden Home for Pre-tuberculous Children. The Liverpool Hospital for Consumption will shortly open at Frankley, in Cheshire, a garden home, with 40 beds, in 18 acres of land, for pre-tuberculous children. It is hoped later on to extend the home considerably, as 150 beds are needed for Liverpool alone, apart from those required for Cheshire. During the past year a nurses' home has been built in Delamere Forest, separate from the sanatorium there. Dr. H. A. Clarke has just retired from the active medical staff of the hospital after 33 years' service, and has been appointed consulting physician.

### *After-treatment.*

In the period immediately following operation the Fowler sitting position is essential, abundant fluid by rectum necessary, and starvation by mouth of the greatest use. Having got the patient through his crisis, let him have bodily and mental and visceral rest. If thirst can be really controlled by proctoclysis not even fluids need be given by mouth for 24 hours, but in the absence of vomiting small drinks bring great relief to the patient and need not be withheld.

Subsequent feeding must depend upon the general condition. In feeble patients begin with clear fluids at the end of 24 hours. In vigorous patients give only water by mouth for 48 hours. Glucose (5 per cent.) in the rectal saline is always useful. Morphia, gr. ⅙–¼, is indicated for the first night, but is not usually required again. Nothing but clear fluids (albumin-water, weak tea, raisin tea, beef juice) are given for four days; on the fifth citrated milk may be added, and by the seventh a little bread-and-butter, milk pudding, or Benger's food can be given. On the ninth day the patient gets pounded fish and a lightly boiled egg. An enema on the third day or earlier may bring relief from flatulence, and a weak aperient, such as inf. sennæ ℥ss., is ordered on the fourth day. Convalescence is usually smooth if the patient rallies from his shock and survives the first few days. Later, subphrenic abscesses or a hæmatemesis may occur, and in this event patients mostly succumb in the end.

### *Conclusion.*

Simple suture will cure permanently at least one-half of those patients who survive. It is time to talk of further operative measures when several months have elapsed, should symptoms of indigestion still persist.

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# Special Articles.

## THE HEALTH OF THE NAVY IN 1923.

THE Statistical Report of the Health of the Navy for the year 1923, just published by H.M. Stationery Office (pp. 149, 5s.), shows an improved standard of health. Compared with the preceding year, there were fewer cases of illness, fewer accidents, fewer deaths, fewer invalidings, and fewer men daily on the sick list. The appended table shows the distribution of the casualties.

In 1923 there was a reduction of about 8000 in the total naval establishment, which falls readily into three great groups—viz., the Atlantic Fleets, the fleets abroad, and the Home Station, the latter including recruits, men under training, and those awaiting discharge. For some reason unexplained the 3710 marines at headquarters are separated off from the 89,100 other men in the Service, who are called the Total Force. The death-rate was 2·9 per 1000 in the fleets abroad and 1·4 in the Atlantic Fleet. There were 38 deaths from injuries and accidents, 18 from drowning, 17 from tubercle, 15 from diseases of the intestines, 13 from suicide, 12 from pneumonia, 11 from heart disease; the total of deaths was 194—2·17 per 1000. The invalidings were, in order of magnitude, as follow: diseases of the eye, 200; diseases of the ear, 158; gonorrhœa, 151; tuberculosis, 143 (50 less than in 1922); neurasthenia, 101; heart diseases, 86; and injuries, 56. In all there were 16·08 per 1000 invalided, a reduction of 20 per cent. in the year. To judge from the curve of actual invalidings the reduction was most marked at the younger ages and in the earlier years of service. This suggests more careful recruiting or better care of the recruit, or both. The Blue-book records events, without stopping to explain the reason for them, but it appears that the benefit is now being reached of the long campaign for better ventilation, for not only are pneumonia and tuberculosis decreased, but also respiratory diseases, such as catarrh, bronchitis, and pleurisy.

Vaccinations and revaccinations to the number of 23,000 are mentioned, which makes it the more difficult to understand how an officer who contracted small-pox at Smyrna had managed to escape revaccination all his time in the Service. There were but 803 cases of influenza in 1923, epidemic only in ships in Australia and New Zealand; in 1922 there were 4514 cases, of which the maximum, 1837, was in the

HEALTH STATISTICS IN THE GROUPS, ROYAL NAVY, 1923.

*Figures for 1922 are in italics, on the left of columns.*

| Per 1000 men. | Training establishment. | | Atlantic Fleet. | | Fleets abroad. | | Home Station. | | Total force. | | Marines at headquarters. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number in group .. .. | *3,293* | 1,729 | *27,200* | 23,850 | *27,750* | 29,600 | *41,610* | 35,650 | *96,560* | 89,100 | *4,300* | 3,710 |
| Wounded or killed in action.. | — | — | *0·03* | — | — | — | *0·02* | 0·02 | *0·02* | 0·02 | *1·62* | — |
| Other injuries . .. .. | *105* | 194 | *85* | 78 | *119* | 109 | *87* | 86 | *95* | 92 | *122* | 180 |
| Venereal disease .. .. | — | — | *93* | 84 | *151* | 127 | *80* | 72 | *104* | 93 | *67* | 36 |
| Other diseases .. .. | *770* | 1,106 | *282* | 198 | *399* | 312 | *383* | 329 | *360* | 288 | *427* | 568 |
| Total cases of disease or injury | *875* | 1,300 | *460* | 360 | *668* | 548 | *550* | 487 | *559* | 473 | *608* | 784 |
| Invalided .. .. .. .. | *41* | 24 | *14* | 11 | *20·7* | 19 | *34* | 28 | *20* | 16 | *29* | 21 |
| Dead .. .. .. .. | *4·8* | 1·2 | *3·6* | 1·4 | *4·4* | 2·9 | *2·7* | 2·1 | *3·4* | 2·2 | *1·2* | 3·2 |
| Sick daily .. .. .. | *31·3* | 19·3 | *17·5* | 16·3 | *26·1* | 15·7 | *27* | 24 | *24* | 22 | *23* | 24 |
| Loss of service per man in days | *11·2* | 7·1 | *6·4* | 5·9 | *9·5* | 8·6 | *10* | 8·8 | *8·8* | 8 | *8* | 8·8 |
| *New Cases of Individual Diseases.* | | | | | | | | | | | | |
| Enteric fever.. .. .. | — | — | *0·22* | 0·16 | *0·6* | 0·7 | *0·18* | 0·08 | *0·33* | 0·3 | *0·46* | 0·26 |
| Influenza .. .. .. | — | — | *67* | 9·2 | *28* | 5·8 | *45* | 13 | *47* | 9·7 | *66* | 3·2 |
| Pneumococcal infection (lungs) | *3·5* | 1·7 | *1·5* | 2·1 | *2·4* | 1·6 | *3·3* | 2·7 | *2·5* | 2·2 | *4·4* | 4·8 |
| Rheumatic fever .. .. | *0·6* | 9·2 | *1·7* | 1·7 | *2·1* | 2·4 | *2* | 1·5 | *1·9* | 1·9 | *2·1* | 3·0 |
| Tuberculosis .. .. .. | — | 1·7 | *2·2* | 1·8 | *1·9* | 2·1 | *2·5* | 1·7 | *2·3* | 1·9 | *1·2* | 1·9 |
| Appendicitis .. .. .. | — | — | *2·7* | 4·7 | *2·9* | 4·7 | *4·6* | 3·6 | *3·7* | 4·3 | — | — |
| Catarrh .. .. .. | — | — | *43* | 34 | *73* | 48 | *70* | 62 | *63* | 50 | *76* | 122 |
| Tonsillitis .. .. .. | — | — | *23* | 22 | *31* | 25 | *32* | 30 | *29* | 26 | *23* | 40 |
| Chancroid .. .. .. | — | — | *12* | 11 | *28* | 24 | *5* | 7 | *14* | 14 | *2* | 3 |
| Syphilis, first record.. .. | — | — | *9* | 9 | *10* | 11 | *8* | 11 | *9* | 10 | *7* | 4 |
| Gonorrhœa .. .. .. | — | — | *60* | 49 | *86* | 71 | *46* | 44 | *60* | 54 | *27* | 16 |
| Total fresh cases, venereal.. | — | — | *81* | 69 | *123* | 106 | *59* | 62 | *83* | 78 | *36* | 23 |
| Scabies .. .. .. | *31* | 24 | *12* | 11 | *10* | 6 | *25* | 21 | *17* | 13 | *11* | 8 |

Atlantic Fleet. Malaria is lessened this year, which on the East Indies Station, is perhaps to be associated with the fumigation of all ships on completion of their annual refit at Bombay One case was invalided for frequent recurrence of blackwater fever There were three apparently quite unrelated cases of meningococcal infection Tuberculosis has decreased remarkably, case, invaliding, and death rates per 1000 being 1 80, 1·00, 0 19, as against 2 26, 1 09, 0 37 in 1022 The attack rate of the sick berth staff is again reduced, now to 2 07 The rate of 4 55 among telegraphists causes question, their cases being distributed over nearly all the stations Infection is believed to have been limited at Hong Kong by disinfecting boats with formalin after their refits, lest infection may have been left behind by spitting dockyard labourers, a promising line of advance. Marines at headquarters seem to have only half the liability (1 9) they manifest on ships (3 31) As this year there are fewer cases of gonorrhœa, the total incidence of venereal disease is reduced, and, as usual, there is least among marines at headquarters It is more prevalent abroad, especially in China. The further results of the closing of brothels in Gibraltar are unmentioned "The great majority of the infections have been contracted by men under the influence of alcohol" is an opinion from China. Two deaths from cholera are reported and one from (clinical) relapsing fever In regard to the latter it does not appear that blood films were sent home for confirmatory opinion. Diseases of teeth and gums, of mouth and pharynx, continue to decrease, much attention has been given to dental repair, two thirds of the defective teeth are being conserved, and only one-third extracted. Cases of scabies are fewer and each a shorter time under treatment. Malignant new growths are also fewer

*No statement is made* of health conditions among cadets at Dartmouth. There are fewer boys under training; their pneumonia rate is reduced and their tuberculosis rate is identical, rather below that of the rest of the Service—3 cases of pneumonia, 3 cases of tuberculosis among 1700 boys. The Admiralty might very well publish fuller information *about the feeding and management* of these boys; it would be welcomed by those in charge of schools

# INDIAN MEDICAL SERVICE

## ANNUAL DINNER

EIGHTY-ONE officers of the Indian Medical Service sat down to the annual dinner at the Trocadero, London, on June 10th. Lieut Colonel R. H Elliot, D Sc., F.R C S, was in the chair, and the guests were Sir Richard Luce, Sir Dawson Williams, and Dr E C Morland The other members of the Service present were as follows —

Major-Generals: Sir R. H. Charles G C.V O K C.S.I B. R. Deare, C.I.E.; T Grainger C.B., G F A. Harris C.S.I., H. Hendley, C.S.I. J B Smith, C.B. C.I E.

Air Vice-Marshal: D Munro, C.B., C.I E.

Colonels J Crimmin, V C C B C.I E., C. M. Goodbody C.I E., D.S.O T A. Granger C.M.G. C. R. M. Green; J A. Hamilton C.M.G, R. A Needham C I E. D.S.O; J J Pratt, H Austin Smith, C.I.E. T Stodart, C.I E., P C. H Strickland R. G Turner C.M.G D.S.O C N C. Wimberley, C.M.G

Lieut.-Colonels: A. W Alcock, C.I.E., F R.S W G P Alpin, O B E., J Anderson, C.I E., L. A P Anderson R. W Anthony, J. T Calvert, C.I.E. R. Markham Carter C.B. H P Cook; W V Coppinger, D S.O J W Cornwall D G Crawford J M. Crawford O.B.E. C. A Gill W D Hayward W M. Houston; E. V Hugo C.M.G W W Jeudwine C.M.G J G Jordan, H C. Keates H Kirkpatrick J. C. G Kunhardt, Clayton Lane J L. Lunham F P Mackie O B E.; J W D Megaw C.I.E. F O N Mell C.I.E. A. Miller, W O S. Murphy, L. A. R. Newman C.I E. H R. Nutt, F O'Kinealy C I.E., C.V O Sir L. Rogers C.I.E. F R.S. L. R. Rost O B E. S. Browning Smith, C M.G R. Steen T G N Stokes, Ashton Street W L Sykes D.S.O C Thomson W H. Thornhill H J Walton D Wardiker R. T Wells, W S. Willmore, H R. Woolbert, A. W. Cook Young A. C. Younan

Majors: A. F Babonau, C.I E. O B.E. Sir T J Carey Evans, M.C C. H Fielding, N H Hume, N C. Kapur, G R. Lynn D.S.O A. C. Macrae V B. Nesfield; E. S. Phipson, D.S.O; A. L. Sheppard; J A. Sinton, V.C., O B.E., W L. Watson, O B.E., W E. R. Williams O B.E.

Captains S. L. Bhatia M.C., J H. Grove-White

# PARIS

(FROM OUR OWN CORRESPONDENT)

### *The Campaign against Alcoholism*

FOR some time past the Academy of Medicine has been preoccupied with the national danger resulting from a recrudescence of alcoholism, and a Commission has been studying the various measures which might be taken to prevent it. *Prof Marcel Labbé* submitted the following resolutions which were adopted and transmitted to the proper authorities The anti-alcoholic regulations of the war should remain in force and be vigorously applied The law in regard to absinthe substitutes should be revised and strictly applied The number of places where alcoholic liquors *are sold should be limited*, the *application of this* measure being facilitated by social ameliorations such as healthy housing construction for the workers and the creation of places of popular recreation The use of grapes as food and of non fermented grape juice should be popularised as well as the industrial utilisation of alcohol Anti alcoholic education should be *organised in all classes of society Other resolutions* are being studied amongst them the question of home distillation, of increasing the duties on alcoholic liquors, and of creating houses of entertainment where only non alcoholic liquors can be consumed.

### *Indemnities for Hospital Personnel*

As I have already remarked, no protection has heretofore been provided against infection or accident incurred by the medical or nursing staff when on duty in hospital Nearly every other kind of *occupation is provided for, either by the law of* 1898 or by new clauses added to it since. In view of several recent deaths among internes at Paris hospitals, the Minister of Labour is promoting legislation to extend the application to hospital personnel so that, for example, disability of 100 per cent. would entitle to a pension of 9706 frs. The widow of a deceased *member of the staff would receive annually* 2912 frs; one child would be allotted 2184 frs. two children 3640 frs, three children 5096 frs., and four children 5825 frs In the absence of widow or children the father and mother of the deceased would receive 2912 frs annually Such in outline are the lines of the provisions being urged by the Minister of Labour which will undoubtedly be *realised very soon.*

### *Arsenic in Puerperal Infection*

Dr Maurice Rivière, professor of clinical obstetrics at Bordeaux, *is employing organic salts of arsenic* for puerperal infection, whether syphilitic or not, and advises this method to the exclusion of any other, especially fixation abscess He finds that arsenical injection generally suffices to avoid complications and to limit infection In practice sulfarsenol is preferred, a subcutaneous injection of 0 12 g repeated at need *every other day up to a total of five or six injections* In some cases the dose is increased to 0 18 g Intravenous injection is reserved for grave forms of disease or those in which the usual methods of treatment have been tried and failed. The medication is said to have been equally efficacious in cutting short an attack of phlegmasia alba dolens.

### *Ovarian Grafts in Psychopathic Conditions*

Dr Toulouse, director of the mental prophylactic service at the Asile St Anne has been trying ovarian *homografts in two cases of melancholia* and in six cases of catatonic syndrome The grafts were obtained from women who had undergone operation for hæmorrhagic fibroma and they were inserted beneath the skin of the patient In the two melancholic cases and in two cases of dementia præcox a notable improvement followed which persisted. The first results are only regarded *as an indication for further investigation* The graft has survived in favourable cases for from 1–1½ years and at the worst it survived 14–21 days. In one of the patients who was considered cured some slight evidence of relapse in the mental condition has since been noted.

### *Horse Serum as Wound Dressing.*

Horse serum has often been used in the treatment of wounds, particularly to accelerate the healing of ulcerated surfaces. Dr. G.-A. Weill (Paris) now suggests its employment to replace collodion, since in drying off it forms in a few minutes a varnish which adheres closely to the integument, with the further advantage of dissolving rapidly in warm water. Dr. Weill suggests that horse serum may thus replace bandage, collodion, or leucoplast in wounds of the face, hands, and fingers. The dressing is light and practically invisible; a little wool or gauze soaked in the serum is spread over the wound, and on the film when it is nearly dry boric acid is powdered to permit of the glove or other clothing slipping smoothly over the dressing. Horse serum is more adherent than collodion and has not the inconvenience of being retractile.

### *International Sanitary Conference.*

A conference, which has been sitting in Paris for some weeks past, is endeavouring to harmonise international views on certain questions of sanitation, mostly of maritime interest. Recent knowledge of incubation periods, modes of infection, and such matters have rendered modifications desirable in various aspects of maritime quarantine. The inspection of immigrants is being carefully considered. Representatives of various governments are attempting a revision of the international conventions now in force.

### *The Death of Prof. Teissier.*

Louis-Joseph Teissier, who has just died in Lyon in his seventy-fifth year, had, since 1878, filled the chair of clinical medicine in the Faculty of Medicine at Lyon, where he was a member of the Academy and administrator of the civil hospitals. In 1908 he was elected national associate of the Academy of Medicine. His scientific works include papers on aneurysm of the aorta, public and social hygiene, pathogeny of influenza and albuminuria, and last but not least a treatise on internal pathology, in collaboration with Laveran, which has rendered great service to successive generations of medical students.

### *Post-graduate Courses.*

Several new post-graduate courses were inaugurated this year at the Faculty of Medicine and in the various hospitals of Paris. The course in urology at the Hôpital Necker, which has just closed, was attended by some 30 students from England, Canada, the United States, and several South American countries. Prof. Lemaître, in charge of the course in plastic surgery, has secured the coöperation of English-speaking surgeons who lecture and demonstrate in turn. Among those who have presided at the classes are Prof. Conrad Smith, of Boston, Prof. C. G. Coakley and Dr. J. E. Sheehan, of New York, and surgeons from England, Ireland, and Canada will take part. This course is really of international scope.

### *Severe Electric Burn.*

In a case observed by Dr. Gelas, in which massive burn of the entire arm required shoulder disarticulation, all the tissues were found to be coagulated. Healing required 15 months, for six months of which an afebrile tachycardia was present. The rectal drop method of administering glucose solution proved helpful in this case. Dr. Gelas remarks that in such cases antiseptics are to be avoided, vaseline or ambrine being used. Operation should follow the burn promptly to prevent absorption of the toxic substances which are formed.

The Aid Society for Physicians' Widows and Children has just adopted two children whose fathers were physicians, and will care for and educate the children until they are 21 years old.

The Abbé Tauleigne, whose death is announced from Pontigny, collaborated with Ducretet and Roger in a number of X ray inventions. He fell a victim to his investigations and received from the Carnegie Foundation in 1923 a silver medal and the sum of 5000 frs. He was 56 years of age.

At a recent council meeting of the French National League against the Venereal Peril, Prof. Jeanselme was unanimously elected honorary president. Dr. Queyrat spoke to the importance of dispensaries and laboratories in combating syphilis, and the Council approved the purchase of land upon which will be erected a central serologic laboratory.

The thirteenth annual hygienic congress is to be held at the Pasteur Institute in Paris from Oct. 19th–21st. The agenda includes a consideration of: 1. Sanitary aspects of immigration. 2. Preservation of food by cold. 3. The functions of sanitary inspectors and bureau chiefs in combating tuberculosis, and a discussion, to be introduced by Dr. Louis Martin, on the measures employed in combating diphtheria. Anyone wishing to read a paper or to attend the congress should apply to Mr. Bossus, 142, Boulevard du Montparnasse, Paris, 14e.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

### *Public Health in Bihar and Orissa.*

AT the 1921 census the population of this province was about 34,000,000, exclusive of the tributary States of Orissa. During 1924 the birth-rate was 35·7 per 1000, as compared with 37·0 in the previous year, and Lieut.-Colonel Ross, in his annual report for the year, remarks that the steady rise of the previous three years has reached its maximum and that the rate is now falling again owing to "discontinuance of the favourable conditions" (which are, unfortunately, not specified). The birth-rate in the districts varied from 26·6 in Purnea to 45·9 in Palaman, and in some of the towns it was as low as 11·8. The death-rate rose from 25 to 29·1, which increase was due partly to climatic conditions and partly to a widespread outbreak of cholera; in the previous decennium, however, the annual average was 34·1. Here, again, there was great variation; in the Singbhum district of Chota Nagpur the mortality was only 16·3, whereas in Cuttack it was 44·1, and such differences cannot but draw suspicion on the accuracy of the statistics. In the different sections of the community the death-rate was 30·9 amongst Hindus, 26·4 amongst Mohammedans, 13·1 amongst Christians, and 22·7 in the "other classes." The general infantile mortality was 158·4 per 1000 births, as compared with 146·5 in 1923; for rural areas the rate was 157·9 and for towns 178·6.

Infectious diseases are naturally more prevalent in the towns, whilst malaria is more prevalent in the rural areas where there are more mosquitoes and economic conditions are often not so good. "The large towns," says Colonel Ross, "are hot-beds of consumption," and respiratory diseases cause far more deaths in town than country. Throughout the province there was a considerable increase in cholera, the death-rate being 2·2 per 1000, as against 0·2 in 1923. Only one district, and that a small one, returned no deaths, and in some of them the death-rate rose to 6·6. Active measures were taken against the disease. Chlorinated lime for well disinfection "has now been generally adopted by local bodies and the procedure is generally known and appreciated." The epidemic cadre of ten assistant surgeons was maintained throughout the year, and a special staff of 20 doctors was employed during the epidemic prevalence, from April to September; also an epidemic reserve of 200 vaccinators was maintained during this period.

"After careful trials kaolin has been introduced as the most suitable treatment for general issue throughout the province, both because it is a valuable remedy, and also because it does not deteriorate when stored, and can be safely entrusted to laymen for distribution; it is both cheap and effective. . . . In previous severe epidemics the total mortality has amounted to from 150,000 to 200,000: in this epidemic the deaths numbered 77,480, although the epidemic was prolonged and very widespread. The figures speak for themselves."

There was a further reduction in mortality from plague (0·8 per 1000, as compared with 0·8 in 1923 and 0·9 for the decennial average), and the disease appears to be slowly diminishing in virulence and prevalence with the lapse of time. Dysentery and diarrhœa caused 26,575 deaths. "The prevalence," says Colonel Ross, "is probably associated with the climatic conditions, and is to a large extent due to the bad state of the water-supply in many parts of this division." It is satisfactory to learn that "the work and usefulness of the school medical officers is gradually becoming better known and more appreciated; and there is every prospect of success in what was at first purely an experiment." The general health of the prisoners in the jails was satisfactory, the average population numbering 6276, of whom 5345 were convicts.

### *The Medical Profession in India.*

An account of the presidential address by Colonel Raghavendra Row, I.M.S., to the Indian Science Congress appeared in THE LANCET of May 22nd (p. 009). The address contained much adverse criticism of the medical profession in India at the present time and has aroused some opposition. At a recent meeting of the Bombay Medical Union the following resolution was passed:—

> "The general meeting of the Bombay Medical Union has considered the presidential address of Dr. R. Row, delivered at the Science Congress this year. It appreciates the efforts of Dr. Row to stimulate the growth of research workers amongst us, but is constrained to express its opinion that the tone and spirit of the address is to overestimate the value of I.M.S., and underrate the Indian medical profession. The allegations made against the Indian medical profession under the heading of 'Statement' said to be furnished by an anonymous I.M.S. man are nothing short of calumny and require to be repudiated by him in fairness and justice to the Indian medical profession to which he belongs. The Union regrets that some of the remarks made by him about the state of affairs of the independent medical profession are not justifiable and are detrimental to their interest leaving aside his exalted views about the I.M.S. as a whole, and from which the Union begs to differ."

### *Poisoning.*

The report for 1924 of the Chemical Examiner, Madras, records an increase of medico-legal work. No less than 234 cases of suspected human poisoning were examined during the year; poison was detected in 100 cases, and as a result of these 100 cases 189 persons were affected and 69 died. The commonest poisons were opium (19 cases) and arsenic and mercury (18 cases each); aconite, atropine, and strychnine were also commonly used. Apparently a larger number of dhatura cases were dealt with than usual, and the Examiner suggests that there must have been a small gang or society of professional poisoners at work. This view is supported by the skill with which the poisoners introduced the drug into the food of intended victims, judging the dose so that their subject was rendered unconscious but not killed. In several instances poisons, such as opium, mercury, and strychnine, were given in arrack, but this medium was usually unsatisfactory, as in most cases the vomiting which immediately sets in seemed to have saved the lives of the victims.

Stains and blood have to be examined frequently and from time to time love philtres are sent for investigation. One of them was in an unusual form in that it was designed for external application and consisted of an oily liquid to be rubbed on the head. This departure from precedent, however, seems to have been worse than useless, since the woman to whom it was applied, so far from conceiving an affection for her lover, ran him in for damages for the mental and physical injuries which the philtre, she said, had caused.

At the request of the Jail Department, the Chemical Examiner carried out research on the effect of tamarind juice and curry on zinc vessels. It was found that these substitutes corroded the zinc if left in contact with it for 24 hours, and that the zinc could be detected in the curry or juice. Zinc vessels have, however, been used in the jails of the Bombay Presidency for several years without any cases of zinc poisoning being reported.

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## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

### *Housing Shortage and Mental Diseases.*

THE housing shortage has been very prejudicial to the health of the population in Germany. Not only have tuberculosis and other infectious diseases been more widespread but the psycho-neurotics among the population have been adversely affected by the difficulties of securing adequate accommodation. Dr. Bernhard stated recently at a meeting of the Berlin Forensic Society that unstable people who had to appear before the housing authorities often came in a state of irritation and with a tendency to commit violent acts. People without energy became unduly depressed and were liable to fits of hysterics when the accommodation granted to them did not meet their wants. The magistrates had often to deal with such people. The decisions of the housing authorities had sometimes led to severe consequences. For example, a seamstress who had been compelled to give up part of her lodging to another party suffered under the delusion that she was being poisoned by them, that they had done wilful damage to the property, and that she was being persecuted by them. She brought an action, causing much trouble to the authorities. In another still more serious case three families had to live together within a small flat. After a dispute one of the tenants shot two others in a fit of mania. A similar case was reported from Frankfort where also a psychopathic tenant had killed two of his fellow tenants. All these cases occurred in people who before the war had occupied a flat of their own and had not been accustomed to share their rooms with other people, sometimes of a different class. Dr. Bernhard was of opinion that in doubtful cases the housing authorities should collaborate with the medical officers of health to inquire into the mental state of those who were to be billeted together.

### *The Dangers of Amalgam-fillings.*

Prof. A. Stock, head of the Institute for Applied Chemistry, has drawn attention to the fact that amalgam-fillings of the teeth may cause mercury poisoning. The Berlin Dental Society has recently discussed the question. Prof. Stock said that severe mercury poisoning, formerly so frequent in workmen, has now become very rare owing to the progress of industrial hygiene; it is thus nearly unknown to the present medical generation. He had himself suffered for many years from chronic catarrh of the nose and the oral cavity for which he consulted several specialists without success. Some time ago it was discovered that the air in his working laboratory contained a minimal quantity of mercury vapour, sufficient, however, to produce symptoms of poisoning in him if inhaled over a long period. Obviously he had an idiosyncrasy against mercury and he was therefore advised by a toxicologist to have his amalgam-fillings removed. When this had been done the symptoms, which had existed for many years, disappeared. He accordingly examined whether amalgam-fillings may indeed give off mercury, and discovered that old fillings give off a small quantity of mercury, while in fresh and defective fillings the quantity is larger. By experiment he ascertained that the air inspired by a man whose teeth had been filled three years before contained mercury. He suggested that medical men, especially those working in throat and nose diseases, should consider whether in an obstinate catarrh the symptoms might not be caused by defective amalgam-fillings. The discussion which followed his address was very animated. Prof. W. Dieck, of the Dental Institute of Berlin University, stated that the d
of amalgam-fillings were known long ago
they were present only so long as the fillin
been entirely hardened. He warned

attempt to generalise from Prof. Stock's own case; he obviously had a special idiosyncrasy to mercury, since even the minimal quantity of mercury in the air of his laboratory had a prejudicial influence on his health. Prof. Schultz was of opinion that medical men should carefully avoid suggestion in taking the clinical history of neurasthenic people who are apt to show symptoms of poisoning if their attention is drawn to the possibility. Prof. Bruck said that strong solutions of sublimate of mercury are often administered to the nose and the oral cavity without causing any damage to the patient. Prof. Joachimoglu pointed out that the diagnosis of poisoning should be made not on the basis of clinical symptoms, but only after chemical examination.

### *Qualification Statistics.*

In Germany the number of medical men has risen from 36,000 in 1921 to 42,000 in 1925. The number of qualifications, which was 1447 in 1913, rose in 1914 to the record number of 3882, because at the beginning of the war all the students who joined the army were entitled to be examined before they had quite finished their curriculum. In 1915 only 1116 qualifications were granted and in 1916 only 576, this being the smallest number on record for many years. In 1917 and in 1918 only 611 qualifications were granted as the universities were partly closed owing to the revolutionary troubles of the latter year. In 1919 the number of qualifications was still small for the same reason, being only 1319, but in 1920 it rose again to 3836, being nearly the same number as that of 1914. In that year the students who had returned from the war qualified in great numbers. Since that time the differences are less marked: in 1921, 2134; in 1922, 2336; in 1923, 2866; and in 1924, 2620 students qualified. The number is now about twice as great as that of two normal years before the war, producing an overcrowding which is further enhanced by the fact that only 600 to 700 medical men die every year. The profession is very unequally distributed throughout the country. In 1914 there were 9·6 medical men for each 100,000 inhabitants of big towns with a population above 100,000, and 3·8 for the remainder; in 1924 corresponding figures were 10·5 medical men for each 100,000 in big towns and 4·5 in the remainder; in 1925, 11·2 and 4·5 respectively; the increase of doctors has thus concerned only the big towns. In 1925 there was one medical man for each 900 inhabitants of big towns, one for each 1000 in towns with 20,000 to 100,000 inhabitants, and one for each 2500 in the small towns and the country. The average number throughout the country is one medical man for each 1500 inhabitants.

### *Unqualified Practice in Germany.*

The Medical Department has published statistics on the number of unqualified persons engaged in medical practice. Their number could be ascertained with accuracy, as according to law they must be registered by the authorities for reasons of control and taxation. Their number rose from 5063 in 1923 to 5648 in 1924, being an increase of 11 per cent. Their clientèle is largely composed of members of educated classes and they are consulted often for financial reasons, as they are believed to charge less than a qualified medical practitioner. Also the predilection for mysticism prevailing since the war, together with frequent advertising (not allowed to the medical profession), has aided to make unqualified practice popular. The report stated that 300 unqualified people were prosecuted, of whom 200 were punished; 47 prosecutions concerned the prescribing of drugs reserved to the medical profession; 43 were for artificial abortion; 33 for practice without fixed residence; 36 for offences against registration regulations; 27 for using a title similar to that used by qualified medical men; 24 for causing injury by neglect; 8 for causing death by neglect; 19 for indecent advertisements; 7 for unfair competition; 6 for libels on medical men; 3 for offences against public morals. The complaints were mostly lodged on behalf of the Society for Combating Unqualified Practice.

## VIENNA.

(FROM OUR OWN CORRESPONDENT.)

### *Visit of English and American Medical Men to Vienna.*

A FEW days ago a large number of English ot rhino-laryngologists visited the clinics of the Vienn University and thus renewed time-honoured relatio which had been severed since 1914. The visitor at any rate if we may judge by the tone of the after-dinner speeches, appeared to be impressed wit the high standard of the work shown them. Th week another large body of English-speaking docto is in our midst. They are American medical me some 250 in number, who have come here on the trip through the European centres of learning. Th visit should have a lasting effect on the relatio between the U.S.A. and Austria, for it is intended t organise a regular exchange of teachers in medic schools and also of health officers between th countries. In his introductory speech the Preside of the American Medical Association of Vienn pointed out that Vienna is regarded in the Stat as the leading centre for studies of nose, throat an ear diseases and for surgery, but that pathologic anatomy, as it is taught and studied in Vienn should have even more importance in the eyes medical students from across the ocean. A speci series of lectures, embodying the latest researches an achievements in each branch of medicine, was hel in honour of the visitors. Prof. Wenckebach discusse the diagnosis of heart diseases, Prof. Eiselsber demonstrated brain surgery, Prof. Fuchs delivere a lecture on errors in ophthalmology, which we specially appreciated, and in Hajek's throat and nos clinic and in Neumann's ear clinic numerous cases cancer of the respiratory organs, labyrinthic case and other most interesting patients were demonstrate Dr. Wagner von Jauregg explained his method treating general paralysis of the insane with malari and showed cases apparently cured by these mean Moreover, the sanitary arrangements of the city, it water-supply, drainage system, hospitals, and th modern housing methods adopted by the municipalit were shown and explained. Especially the latt point is well worth careful attention. Vienna is th only city on the continent where the housin problem—one of the most burning problems sinc the war—has been attacked and nearly solved o a grand scale. By a specially adopted system taxation of the existing flats, houses, or dwelling the municipality has obtained means to erect a whol series of enormous buildings and blocks. providin healthy, modern, airy, and well-lighted dwellings f 25,000 families within two years. These houses, re people's palaces, are planned carefully in such a wa that every dwelling, every room has direct ligh ample bathing facilities have been provided, and als playgrounds for the children. A remarkable featu is the absence of dogs in these buildings. They ar banned for hygienic reasons. The foreign medic men were greatly impressed by this effort in th direction of preventive medicine—the housing develop ment cannot be better termed—which will, it hoped, help to make Vienna one of the healthies cities in Europe.

### *Generalised Infections caused by Ophthalmic Diseases.*

An interesting paper on general infections from a ophthalmic source was presented by Dr. Herren schwand to the Medical Society of Innsbruck recentl He stated that it is not always easy to prove th primary infection in the eye, as this may have bee of a transient nature. But pathogenic germs ca easily be shown to pass the naso-lacrymal ducts an thus enter the nose, the pharynx, the lung Especially the pneumococcus may be found, causin an acute coryza, or swelling of the deep cervica glands, or even articular inflammations. Maxe

Cowper and Enright have shown this with the *Bacillus prodigiosus;* the conjunctival infection brought the germs into the respiratory tract, oral infection into the intestinal tract. Purulent conjunctivitis due to the gonococcus may cause metastatic disease of the joints both in the adult and in the infant; a case of meningitis has been reported by Schall to follow it, and pyæmia with gonococcal abscesses has been repeatedly noted as a sequela. That a general infection can arise from tuberculosis of the eye has not yet been definitely proved although experimentally it is possible to infect internal organs of the animals used by introducing tuberculous matter into the conjunctival sac. The *Bacillus pseudo-tuberculosis rodentium* has been observed to cause disease of the glands in the neck, the primary lesion in the eye having escaped notice. Syphilitic primary infections of the eyelids, or conjunctiva, infections with anthrax or tetanus do not differ in any respect from those in other parts of the body. A severe encephalitis may be produced in an animal by inoculation of the virus of herpes into the cornea. It is remarkable that infection of the interior of the eyeball rarely causes a generalised infection; mostly the route is via the lacrymal duct, nose, and tonsils from the conjunctiva or cornea only.

### *First-aid Association of Vienna.*

At a recent function on behalf of the public ambulances, the ex-President of the Vienna police and former Prime Minister of Austria, Herr Schober, delivered an interesting report on the activity of the "Wiener freiwillige Rettungsgesellschaft" (Voluntary First-aid Association). This corporation was founded in 1881, after a fearful disaster, when nearly 1000 lives were lost in a fire at the municipal theatre, most of which could have been saved if a first-aid organisation had then existed. This association became a model for all similar bodies on the continent, and in the 45 years of its existence it has had ample opportunity to render assistance beyond the city of Vienna and even outside Austria, for example, after the earthquake at Messina. Altogether 561,253 persons have received medical or surgical assistance in cases of accident or sudden illness in the street. The record was reached in the year 1913, when 22,586 individuals were registered, whilst in 1925 this figure was also nearly reached, 22,438 persons having been taken care of, or an average of 62 per day. The society has two different accident departments in the city, so that cars with first-aid outfit and medical attendants can be called from the place nearest to the scene of disaster. A medical staff of 18 doctors and medical students, eight motor-ambulances, and adequate equipment for sending out, in case of need, 24 conveyances fitted with stretchers, surgical appliances, and other necessities, including complete gas- and smoke-proof outfits, belong to the regular outfit of the association. Its financial position has, however, become very serious, since the sum required for 1926 amounts to £15,000. Propaganda on a large scale has been organised to obtain the necessary funds. The medical work done by the members of the association is not negligible. Regular first-aid classes are held every two months, open to all adults, with practical classes at the end. Members of the police force, school-teachers, factory inspectors, and sportsmen have made arrangements for special classes, and the beneficial effect of the spread of first-aid knowledge cannot be over-estimated.

### *Congress of the German Society for Urology.*

The seventh convention of the German Society for Urology will take place in Vienna from Sept. 30th till Oct. 3rd, with Prof. Blum presiding. The proceedings have been divided into three large groups—viz., (1) pain in urology and its prevention; (2) pathology, pharmacology, and therapy of anuria; (3) malignant disease of the bladder, its pathology and treatment. To introduce each of these three topics three men have been chosen, amongst them scientists from Austria, Germany, Hungary, United States of America, Japan. They will present their theses conjointly in the mornings and the discussion will take place in the afternoons. At the same time the Hungarian Urologic Society has invited all the members of the German Society to pay a visit to Budapest after the proceedings on Sunday, Oct. 3rd, and to inspect the special hospital in that city.

# Public Health Services.

## SCHOOL MEDICAL SERVICE.

IN the following table the figures given in the reports from Hull, Scarborough, and Margate are set out:—

| Name of town. | No. on roll. | Av. elem. school attendance. | No. of routine children examined. | No. of special examinations and re-inspections. | Percentage of children found on routine examination requiring treatment.* |
|---|---|---|---|---|---|
| Hull .. | —† | —† | 16,841 | 13,276 | 9·8 |
| Scarborough | —† | —† | 1,210 | 1,067 | 20·51 |
| Margate .. | 3,308 | 2,887 | 1,097 | 831 | 0·8 |

* Excluding uncleanliness and dental defects. † Not given.

### *Margate.*

The small number of children in the elementary schools must come as a surprise to those who have seen Margate only in the summer-time. Dr. Rowan McCombe's report illustrates how a small population like this affects the organisation. On the one hand, the M.O.H. is himself not only the S.M.O. and anæsthetist to the clinic, but also physician to the Welfare Centre, thus ensuring close coördination, but entailing much work. On the other hand, with such small numbers there is naturally less likelihood of the town possessing any kind of special school. To fill the need joint action is necessary. Dr. McCombe states that a home for the mentally defective is badly needed in Kent. It would seem that accommodation for those suffering from some physical defects is equally needed. The number of exceptional children reported seems rather low—e.g., four mentally defective and two epileptic out of some 3000 children. The number of heart cases is, as Dr. McCombe says, surprisingly few, only one case of organic disease being found in over 1000 children. That the interest and confidence of the parents has been won is shown by the fact that 80 per cent. of the parents attend the medical inspections. Sixty-nine cases of tonsils and adenoids were operated on at the excellent clinic out of 73 who were recommended for operation, and of 176 children with errors of refraction 171 got glasses. The dental scheme is now so extensive that every child at school can have his teeth completely treated every other year; 1127 cases were dealt with this year, more than a third of the children in the schools.

### *Scarborough.*

Dr. S. F. Linton, M.O.H. and S.M.O., writes a brief introduction to the report by his assistant, Dr. Anne Roxburgh, which shows that much attention is given to the infants. A nursery school and a special nursery class are held. The school clinic is also the Infants Welfare Centre; both are run by the S.M.O., and so a continuous record is kept of all children who attend. The careful return of exceptional children shows that while the present accommodation is not adequate a fair effort is now being made to meet the need. A special class, not yet recognised under paragraph 5 of the Education Act, 1921, is held for mentally defective child.

The opening of the new orthopædic hospital at Kirkbymoorside will greatly help in the treatment of crippled children. There are some 65 delicate children, four of whom attend a special voluntary class. There is no open-air school, though even in this healthy town such a school would have much economic value. Facilities for treatment appear to be satisfactory, and 80 per cent. of those requiring dental treatment obtained it. Dr. Roxburgh recommends operation for tonsils and adenoids (1) if the tonsils interfere with speech or respiration; (2) where there are recurrent attacks of tonsillitis; (3) where there are enlarged cervical glands; (4) where there is associated ear trouble. These classes are obviously not meant to be exhaustive, and Dr. Roxburgh is no doubt acquainted with recent researches claiming relative immunity from infections for children who have had their tonsils removed. In the sanitary survey of the schools neither the accommodation nor the date of erection is given, and trough closets which are becoming less favoured in modern schools were found in six of the seven schools in the town.

### *Hull.*

Dr. J. W. Fraser presents his last report, and all who know his work in Hull will regret his coming retirement. The prompt remedy of defects at the youngest ages largely accounts for the comparatively small number of defects found; 87·3 per cent. of those needing dental treatment received it. The condition of the teeth of the entrants is apparently very bad, but with an increased dental staff it will be found possible to deal with children at an earlier age, perhaps before school life starts, as is done in Cambridge. Cleanliness shows continual improvement and is 20 per cent. better than last year. An orthopædic scheme has now been sanctioned, and includes the establishment of a special clinic and the appointment of an orthopædic specialist. Under this scheme the present excellent physical defective school will ultimately take children between the ages of 2 and 16 years suffering from non-tuberculous crippling, the tuberculous cases being dealt with elsewhere. Already the age of admission has been reduced from 7 to 5 years. It is to be regretted that owing to the present financial restrictions it is impossible to start an open-air school. The Charity Organisation Society included Hull in their inquiry as to the adequacy of the accommodation for epileptics in this county. In Hull there are 61 cases of epileptic children, of whom only 12 are considered severe; of these eight only were deemed to be educable. This is in keeping with the society's conclusion that although there is a shortage of accommodation in the country as a whole yet in most areas the numbers are too small to warrant local institutions, and the difficulty must be met by the provision of special residential schools under several joint authorities. Dr. Fraser has always taken an especial interest in the backward and mentally defective. For the backward, which class probably includes the severely dull and some of the stable high-grade defectives, he has craft classes which have been further extended. For mental defectives he has a very efficient special school. He gives the after-history of the pupils of this school in regard to employability, and these figures are also given for the deaf. Omitting those who cannot be traced or are dead, among the mentally defectives 62 out of 183 are in work (34 per cent.), and among the deaf 31 out of 36 (86 per cent.). The figure for the deaf is considerably above that found elsewhere, but the results of the mentally defectives seem not so good. It might perhaps be higher if all the children were kept till 16, and given more advanced manual training. It is true that often it is easier to find employment for a child of 14, but usually only of a temporary nature. It may also be that a few high-grade defectives who would do well never reach this special school, but remain in the craft classes or even in the elementary schools. In conclusion, Dr. Fraser thanks all those who have worked with him—gratitude which is likely to be mutual.

## INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 12TH, 1926.

*Notifications.*—The following cases of infectious disease were notified during the week:—Small-pox, 201 (last week 210); scarlet fever, 1370; diphtheria, 796; enteric fever, 34; pneumonia, 709; puerperal fever, 55; cerebrospinal fever, 9; acute poliomyelitis, 8; acute polioencephalitis, 2; encephalitis lethargica, 44; dysentery, 10; ophthalmia neonatorum, 103. There were no cases of cholera, plague, or typhus fever notified during the week.

*Deaths.*—In the aggregate of great towns, including London, there were 2 (0) deaths from enteric fever, 29 (2) from measles, 4 (2) from scarlet fever, 36 (3) from whooping-cough, 22 (7) from diphtheria, 41 (10) from diarrhœa and enteritis under two years of age, and 67 (5) from influenza. The figures in parentheses are those for London itself.

# The Services.

### ROYAL ARMY MEDICAL CORPS.

Lt.-Col. W. A. Woodside retires on retd. pay.

Lt. J. F. P. Gallagher to be Temp. Capt. and temporarily relinquishes the rank of Lt.

#### TERRITORIAL ARMY.

Lt.-Col. D. C. L. Orton to be Bt. Col.

2nd Lt. J. G. Graham (late R.F.A., Special Res.) to be Lt.

2nd Lt. E. R. C. Walker (late Royal Highlanders) to be Lt.

E. A. L. Murphy to be Lt.

### INDIAN MEDICAL SERVICE.

Lt.-Col. A. B. Fry to be Col.

Temp. Lts. Jagan Nath Madan and Hans Raj Balooja to be Temp. Capts.

The King has approved the retirement of Lt.-Col. G. McPherson.

Bubonic Plague in South Africa.—The Bulletin of the Department of Public Health, Pretoria, for the week ended May 22nd, gives the following reports respecting bubonic plague in the Union:—Middelburg District (Cape): The third European bubonic case, reported in last week's Bulletin, at Sakfontein, has died. Two further cases, one European and one coloured, are reported from the same farm. The disease in these two cases is of the pneumonic type. Hoopstad District (Orange Free State): Two further native fatal cases are reported at Protestpan, 15 miles from Bullfontein.

Memorial to the late Dr. Alfred Miller.—On the afternoon of June 6th, in the little chapel of the County Mental Hospital, Hatton, Warwickshire, a new altar and reredos were dedicated by the Bishop of Coventry in memory of Dr. Alfred Miller. A mural tablet bears the following inscription: "To the Glory of God the Chancel of this Chapel was renovated and the new Altar and Reredos erected by his friends and fellow workers in memory of Dr. Alfred Miller, Medical Superintendent of this Hospital from May 9th, 1889, to the day of his death, December 4th, 1923."

Livingstone College, London.—Commemoration Day was celebrated on June 9th, when the Bishop of Chelmsford presided over a large number of guests. The Bishop said that the College exists to help all missionary societies of the church and churches in order that missionaries might have some kind of knowledge as to the management of their own health and that of other people. The Rev. B. T. Butcher, of the London Missionary Society, Papua, gave an address, and Mr. R. L. Barclay, hon. treasurer of the College, said that in memory of Dr. C. F. Harford a fund had been established. They had aimed to raise £3000 and to date had received £770. The Principal, Dr. T. Jays, said that missionary societies should see to it that the men they sent out should know how to preserve their own health. He had had letters during the past few weeks from many old students expressing gratitude for the knowledge gained at Livingstone College. Last year 103 students entered the College.

# Correspondence.

"Audi alteram partem."

## VENEREAL DISEASE LEGISLATION.

*To the Editor of* THE LANCET.

SIR,—Adverting to the very interesting leading article on this subject in THE LANCET of June 19th, it will interest you to note that proposals of a somewhat similar kind had been made by me in 1918 and again in 1922. The proposals impose certain obligations upon infected persons in regard to obtaining medical advice, and also in regard to knowingly or wilfully infecting any other person with venereal disease. The other points of equal importance, as you will note, are alluded to in the other clauses. The object of bringing these proposals forward was to afford an opportunity for their discussion. Unfortunately, however, opposition from bodies, professedly interested but not fully conversant with the facts, prevented this course being followed.

I am, Sir, yours faithfully,
E. W. HOPE.

Liverpool, June 19th, 1926.

*** Prof. Hope's proposals at the later of the two dates he mentions took the following form:—

Public Health Department, Liverpool, March 10th, 1922.

*Venereal Diseases: Suggested Regulations.*

*Duty of Person Infected.*—(1) Every person suffering from any form of venereal disease as soon as he is aware or has reason to believe that he is suffering from such disease, shall forthwith consult a medical adviser with respect thereto, and shall furnish to him his correct name and address and place himself under his treatment. (2) Every such person shall continue to attend or be attended by his medical adviser, and to follow his advice and treatment until he is deemed free from infection. (Provision to be made for change of medical advisor and for routine procedure in case of neglect to continue treatment.) (3) No person shall knowingly or wilfully infect any other person with venereal disease or do or permit any act likely to lead to such infection.

*Duty of Parent or Guardian.*—Every parent, guardian or person in charge of child (under 16 years of age) or mental defective suffering from any form of venereal disease, and who knows that such child or defective is suffering from such disease, shall cause the child or defective to be treated and continue treatment for such disease by a medical adviser.

*Penalties.*—Section 1 (3) of the Public Health Act, 1896, provides that if any person wilfully neglects or refuses to obey the execution of any regulation under Section 130 of the Public Health Act, 1875, he shall be liable to a penalty not exceeding £100 and in the case of continuing the offence of a further penalty of £50 per day.

*Duties of Medical Practitioner.*—(1) The doctor shall direct the patient's attention to the infectious character of the disease, and to the necessity of continuing treatment until free from liability to infect, and to the penalties prescribed. (2) To arrange for transfer to another medical adviser when the patient so desires. (3) When a patient discontinues medical treatment without adequate reason, the medical adviser will forward his name and address to the medical officer of health. In any case where a fee is not paid by the patient to the doctor, the provision for such payment shall be made on the lines which the Ministry have already authorised in Liverpool in regard to the domiciliary treatment of non-insured tuberculous persons Suitable forms shall be provided for the use of medical practitioners intimating the obligations upon patients—arrangements for transfer when necessary—and forms of notice to the medical officer of health as to acceptance of a patient by the practitioner, and when necessary, his non-attendance. Drugs specially necessary for treatment shall be provided free of charge to medical men as hitherto. Ordinary prescriptions shall be paid for as in the scheme for domiciliary treatment of tuberculosis.

*Duty of Medical Officer of Health.*—The medical officer of health, on receipt of a notice from the medical adviser in regard to any patient, shall make inquiries from the person named as to the reason for discontinuance of treatment, and unless satisfied shall cause an information to be laid in a court of summary jurisdiction.

*To the Editor of* THE LANCET.

SIR,—The leading article under the above heading in your issue of June 19th did not refer to the Bill to amend the Venereal Disease (1917) Act introduced by Mr. Basil Peto in the House of Commons on June 16th. The object of this Bill is to amend the Venereal Disease Act (1917), *so as to give effect to* the recommendation contained in Clause 14 of the report issued in 1923 of the Committee of Inquiry on Venereal Disease presided over by Lord Trevethin. Under the Venereal Disease Act (1917), the extraordinary position arises, which was clearly unintended and which has arisen owing to some error in drafting, whereby a chemist may sell any so-called disinfectant for the prevention of venereal disease, the public having no guarantee that such so-called disinfectants are in fact efficient disinfectants. The chemist may also supply oral instructions for the use of such disinfectants, but he may not supply printed or written instructions drawn up by any authoritative person or persons. Mr. Peto's Bill appears to contain only the amendments which are absolutely necessary—and which have been previously advocated by the British Social Hygiene Council and the Society for the Prevention of Venereal Disease—in a simple and practical form. I venture to hope that you will be able to exert your powerful influence on behalf of a second reading without opposition.

I am, Sir, yours faithfully,
H. WANSEY BAYLY,
Hon. Secretary, Society for the Prevention of Venereal Disease.

Harley-street, W., June 21st, 1926.

*** Our Lobby Correspondent reports Mr. Peto's speech on p. 1281.—ED. L.

## VOLUNTARY TREATMENT IN MENTAL HOSPITALS.

*To the Editor of* THE LANCET.

SIR,—I desire to bring an important medical issue, affecting the community, to the notice of the medical profession in Scotland. In itself mental illness is always distressing, but it is made much more so if, before treatment can be obtained, a patient must be certified by doctors and registered by the sheriff as a "*person of unsound mind.*" This additional suffering is, however, in most cases quite unnecessary. It is, for example, not inflicted on the majority of patients of the richer classes, for these regularly enter our mental hospitals not as certified but as voluntary patients. Their admission as such enables them also to avoid the slur that unhappily attaches to those who have been treated in mental hospitals, as in the eyes of the law a voluntary patient, whatever his mental condition may be, is not regarded as a "person of unsound mind." To many it may come as a revelation that two-thirds and more of those with means, who undergo treatment in our mental hospitals, do so as voluntary patients.

The poor are entitled to exactly the same privileges as those with means, but owing to ignorance and misunderstanding their rights have not been brought to their notice, and in consequence over 90 per cent. of rate-supported patients are certified and registered as "*persons of unsound mind.*" Not 1 per cent. receives treatment as voluntary patients. There is something amiss when such a difference exists in the means of obtaining treatment for an illness by members of these two classes. Among the misunderstandings is the belief that a voluntary patient costs the ratepayers more than a certified patient. In the latter case it is said the Government gives a grant-in-aid amounting to £7 0s. 6d. per annum, whereas no such relief is afforded the ratepayer in the case of a voluntary patient. This is an error. The cost to the ratepayers is exactly the same in both cases, as the Government grant is not calculated on a capitation basis but consists of a fixed sum given annually as a grant-in-aid to the parishes, irrespective of the number of patients or whether they be certified or voluntary.

Another impression commonly held is that no person of unsound mind whom it is possible to certify can be admitted as a voluntary patient. This also is an error. It has been stated by the highest legal authority on matters connected with lunacy, and his views have not been opposed officially, that if *such a condition ever existed it was repealed* in the Act of 1913. There is one condition, and one only, to be observed, and it is that the patient should desire to submit to treatment.

The procedure is simplicity itself. The patient gives to the medical superintendent the following letter: "Dear Sir,—I desire to be admitted as a voluntary patient to the (name the mental hospital). I am, &c." In other words, a patient entering a mental hospital voluntarily has to express his wish in writing. He has also to give three days' notice of his intention to leave. A rate-supported patient desiring this form of treatment must have the approval of the officials of the parish council—namely, the medical officer and the inspector. I would appeal to every doctor in Scotland to make this provision known to the poor and to recommend every patient of his requiring treatment in a mental hospital to enter as a voluntary patient.

Only those who have seen the distress that medical certificates and sheriffs' orders occasion to patients and to their relatives and know how unnecessary they are in the majority of cases, can realise all the good that will result from following the above advice. The sick in mind and the poor will benefit, and mental hospitals will, we hope, be regarded, not as places of detention, but as hospitals for medical treatment like other hospitals. As for doctors they will be relieved of a distasteful, a thankless, and a perilous public service.—I am, Sir, yours faithfully,

GEORGE M. ROBERTSON.

University of Edinburgh, June 21st, 1926.

## BEAT-KNEE AS A FORM OF RHEUMATISM.

*To the Editor of* THE LANCET.

SIR,—In the following list of ten beat-knee cases which have come before me consecutively, I have been impressed by two factors at least common to most of them—namely, inflamed gums and a partiality for acids such as vinegar and sauces, whilst the majority have a liking for meat. Nail-biting is a very common habit amongst these men and several suffer from pharyngeal catarrh. Lumbago is, or has been, present in several, whilst the heart in several cases was not normal.

A, aged 18. Has slight swelling over the knee; eyes and pharynx inflamed; bites nails; cannot play football because he is short-winded; gums inflamed. Heart not normal. Very fond of meat and salt.

B, aged 49. Had beat-knee of left leg May, 1925, and of right leg eight years previously; three months ago had lumbago. Is very fond of vinegar and meat. Gums inflamed. Takes no milk.

C, aged 57. Has had rheumatism, and the heart is not normal; gums inflamed. Very fond of pickles.

D, aged 28. Had beat-knee in 1925. Complains now of "strained back." Has a "cold"; pharynx inflamed; bites nails. Heart not normal. Smokes heavily. Very fond of vinegar.

E, aged 43. Has pyorrhœa. Heart not normal. Very fond of meat. Pale.

F, aged 37. Is subject to "indigestion"; tongue very furrowed; heart not normal; short of breath; gums inflamed; bites nails.

G, aged 27. Bites nails; gums inflamed. Very fond of sauce.

H, aged 23. Very fond of vinegar and dislikes milk. Heart not normal; pyorrhœa; throat inflamed; bites nails.

I, aged 36. Had beat-knee six years ago on the other leg; gums inflamed. Fond of vinegar and dislikes milk. Throat inflamed.

K, aged 19. Gums and throat inflamed; heart not normal. Very fond of vinegar. Bites nails.

Cases B and D are interesting as showing a sequence of beat-knee and lumbago, for compensation purposes called "strained back." Cases B and I show the knees affected alternately. There is no doubt that beat-knee, like rheumatism, is the expression locally of a constitutional disturbance and most observers will agree that the disturbance is identical. Carditis in children, as far as my experience goes, occurs only in those who dislike milk, but are fond of acids like vinegar. Nearly all these children have inflamed or puffy gums and many bite their nails.

As chilblains occur in the extremities of those persons who have a certain predisposition, by a local interference with the capillary circulation, so beat-knee occurs in a person with the rheumatic predisposition by a local irritation of the capillary circulation over or in the region of the bursa patella. Did friction alone give rise to beat-knee the majority of colliers would suffer from this trouble; as it is, the percentage is not higher than that of heart disease amongst the same class and depends, like the latter disease, on the presence of the necessary predisposition.

I am, Sir, yours faithfully,

G. ARBOUR STEPHENS, M.D.,

Consulting Cardiologist, King Edward VII. Welsh
June 21st, 1926. National Memorial Association.

## THE TITLE OF APOTHECARY.

*To the Editor of* THE LANCET.

SIR,—In your editorial remarks anent a letter on this subject in your issue of June 19th you very rightly draw attention to the dissociation between the appellation of apothecary and that of general practitioner.

The Society of Apothecaries grants a licence to practise medicine, surgery, and midwifery in the same way that the Royal College of Physicians grants its licence, but the holders of the former are no more apothecaries than the latter are physicians. To become an apothecary it is necessary to be a freeman of the Society which is one of the City Guilds, to become a physician entails being a Member or Fellow of that College.

By a recent regulation any newly qualified licentiate of the Society of Apothecaries can become a freeman by complying with the requirements and paying a modified fine by instalments. The Society of Apothecaries is almost the only one of the City Guilds which still actively pursues the objects of its charter granted by James I. (although it no longer manufactures drugs), but being on this account largely composed of men in the medical profession, it is not necessarily confined to such, any more than, as you remark, are the freemen of the Cordwainers Company composed of merchants in the leather of Cordova.

I am, Sir, yours faithfully,

T. VINCENT DICKINSON, M.D.,

June 21st, 1926. Master of the Society of Apothecaries.

## THE DANGER OF OPIUM IN COMBINATION WITH OTHER DRUGS.

*To the Editor of* THE LANCET.

SIR,—Happening to pick up an old number of THE LANCET, I came across a paragraph on aspirin tablets with Dover's powder. May I say that in my experience Dover's powder should not be compounded with aspirin? In most cases it acts well, but in some cases susceptible to opium it retards the action of aspirin as regards secretion and causes serious danger. Caffeine gr. i. (instead of the Dover's powder) and followed by hot toddy is far safer and better in *pneumonia, influenza*, &c. Small doses of morphia act capriciously, and morphia should always be given in a single dose, and for a definite purpose. I have seen iodism from gr. ii. of potassium iodide when combined with tr. camph. co. in small doses. If a sudorific does not set up free perspiration it becomes dangerous, the most striking example perhaps being the hyperpyrexia of acute rheumatism from sodæ salicylate retention, when perspiration stops.

In my view, morphia should always be used *alone*.

I am, Sir, yours faithfully,

Newcastle-upon-Tyne, June 19th. T. M. ALLISON.

## RADIOLOGICAL INVESTIGATION ON THE ACTION OF PURGATIVES

*To the Editor of* THE LANCET.

SIR,—In the annotation in your issue of June 19th on the recent radiological investigations on the action of purgatives carried out by Prof. P. Alessandrini, of Rome, it is stated that such investigations had hitherto only been made on animals. It is, however, 18 years since Mr F. Cook and Mr. E G. Slesinger, then students and now assistant obstetric surgeon and assistant surgeon respectively at Guy's, carried out a series of radiological and other observations on the action of saline aperients with me. Our results were communicated to the Therapeutical Section of the Royal Society of Medicine and were summarised, together with subsequent radiological investigations of my own on the action of aloes, cascara, castor oil, and calomel, in the first edition of my book on Constipation published in 1909. In 1910 Stierlin made similar observations with senna, and in 1914 Dr. W. R. Reynell, who was at that time my house physician, investigated the action of liquid paraffin It is impossible to give more than a very short summary of our results in a letter, but on the whole they agree very closely with those of Prof. Alessandrini

We found that saline aperients act only on the colon As they frequently act within an hour—i e long before they have reached the large intestine, both according to Alessandrini's and our observations—it is clear that they cannot act, as is still commonly taught, by attracting fluid into the lumen of the bowel Moreover, the liquid stools contain no excess of the salt, which is chiefly excreted in the solid stool passed the next day We believed that they must, therefore, act only after absorption, but in view of the reflex contraction of the gall-bladder, which Meltzer has shown occurs when magnesium sulphate is introduced into the duodenum, it is possible that the true explanation is that the salts also give rise to a duodeno-colic reflex, which evacuates the fluid contents of the proximal colon. My observations showed that cascara acts on the small as well as the large intestine, and not only on the latter as stated by Alessandrini On the other hand, aloes and senna act only on the colon. Castor oil acts on the small intestine as well as the colon; the delay it causes in the evacuation of the stomach is due to the inhibitory action it shares with all fats, as Pavlov showed many years ago Lastly, liquid paraffin only accelerates the transit through the colon.

I entirely agree with your annotator that observations of this kind show that radiological methods are valuable in the study of the complex questions of experimental pharmacology, but it seems a pity that in reviewing Italian work published in 1925 he should have ignored the investigations on the subject done more than ten years earlier in England.

I am, Sir, yours faithfully,
ARTHUR F HURST.

New Lodge Clinic, Windsor Forest June 21st, 1926

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UNIVERSITY OF LONDON CLUB —A well-attended reception was held at the club on Tuesday evening, June 22nd, to meet Prof Ernest Gardner, Vice-Chancellor of the University, Mr S. L. Loney, chairman of Convocation, and members of the Senate, and there was a distinguished gathering of graduates in many faculties. The chairman of the club, Mr Walter Seton, D Lit in welcoming the guests, referred to the recent introduction of a widened basis of membership in the club Hitherto membership has been limited to graduates, teachers, and officers of the University of London and others connected with the University and its colleges, schools, institutions, and organisations. It has now been decided to admit to membership graduates of other universities, persons who, though not graduates of the University, hold one of the diplomas granted by the University, and others who have taken an approved professional qualification such as the M R C.S., L.R C.P. He expressed the hope that the existing membership of 700 would soon be raised to 1000, which could be done without overcrowding the present accommodation An admirable programme of music was provided in the club hall by the University of London Musical Society

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS

### *Venereal Disease Act (1917) Amendment Bill.*

MR BASIL PETO presented a Bill to permit the sale by chemists of disinfectants for protection against venereal disease. The Bill was read a first time.

The object of the Bill which I am asking leave to introduce, said Mr Peto, is to give effect to the recommendation of the Committee, appointed by the Ministry of Health, which sat under the chairmanship of Lord Trevethin, contained in Clause 14 of their report issued in 1923, and which is as follows:—

> "We think that the law should be altered so as to permit properly qualified chemists to sell ad hoc disinfectants provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority"

Clause 1 of the Bill amends Clause 2 of the Venereal Disease Act, 1917, so far as that Act relates to the prevention of disease, and Clause 2 of the Bill provides for the setting up of the competent authority As to the present state of the law I cannot do better than quote what the Minister of Health said in reply to a deputation which waited upon him in July, 1923, and which was introduced by the late President of the Society for the Prevention of Venereal Disease (Lord Willoughby de Broke) The Minister said:—

> 'I have been to the best fountain I could, the Law Offices of the Crown, and I have put to them certain questions as to the exact meaning of the relevant section to the Act of 1917 We have this position, that to-day a chemist may sell ad hoc disinfectants for the purpose of prevention. To-day a chemist may verbally recommend to a customer such preparations for such purposes What he may not do is to give any written or printed instructions, although he may give verbally such instructions to the customer . It is clear that it would require an alteration in the law to permit the chemist to give printed or written instructions, and personally I think that if these things are to be sold, printed or written instructions should be supplied with them. It would also be necessary to pass legislation if the sale of these preparations is to be limited to such as are approved by a competent authority"

There is agreement as to the desirability of taking all steps possible for the prevention of this terrible disease The trouble so far has been as to what should be the competent authority A great deal of evidence as to the efficacy of preventive measures accumulated during the late war, of which I have only time to give two examples. Sir James Barrett who was in medical charge of the Australian Forces during the war, says:—

> "In my experience primary prophylaxis has been practically certain in its results."

And he states that in one camp out of 4100 men who reported exposure to infection that as a result of primary prophylaxis only 13 infections resulted Surgeon Captain Hamilton Boyden, who was in medical charge of the Naval Gunnery School at Portsmouth during the two years from 1918 to 1920, says that 923 bottles of 1 in 1000 solution of potassium permanganate were supplied to men who intended to incur danger of infection; and only one man was infected During 1917 the men at the Royal Artillery Barracks at Portsmouth were carefully instructed to disinfect without delay, and out of 3750 only five were infected during a period of nine months There is also evidence from Colonel Harrison as to what would be the effect of similar steps on the civil population. His experience during the war shows what could be done to reduce venereal disease in the civil community It seems to me perfectly clear that the civilian population should have free access to reliable preventives against venereal disease It is not only a question of the present generation, we have to consider the effect of this terrible scourge on future generations. The best medical opinion is unanimous that a very large proportion of the cases of paralysis, malformation, mental deficiency, insanity, epilepsy and blindness, which cost the country almost untold loss in the efficiency of the population, and a direct loss in keeping these unfortunate victims, are due directly to parental syphilis or gonorrhœa.

I will give the House, Mr. Peto continued, one example as to blindness The Report of the Departmental Committee on the Causes and Prevention of Blindness, which was issued by the Ministry of Health in 1922, states that of 1835 cases of school blindness occurring in the schools for the blind of the London Education Committee, in 1920 alone, 309 were due to parental gonorrhœa and 618 due to parental syphilis The cost of the present method of dealing with this disease exclusively by curing it, instead of dealing with it, as far as we can, before the germ is allowed to penetrate from the surface, is, according to the Annual Report of the Ministry of Health for 1924-25, very

The grants paid in one year in aid of venereal disease schemes amounted to £281,000, and the cost to local authorities of carrying out those schemes was over £358,000, making a total of £600,000. That is but a very small part of the cost to the country as a whole of the results of this terrible disease. I appeal to the House, not only to give the Bill a first reading, but, as all quarters of the House are agreed as to the need of the Bill, to give it a second reading in due course. Whatever else this House may do before the end of the session, at least we should pass this measure for the relief of suffering humanity.

The question being put, the Bill was ordered to be brought in by Mr. Basil Peto, Mr. Bennett, Major-General Sir John Davidson, Sir William Davison, Lieut.-Colonel Fremantle, Mr. Haden Guest, Lieut.-Commander Kenworthy, Dr. Drummond Shiels, Mr. Snell, and Dr. Watts.

### *Vaccination Bill.*

Clause 1 of the Vaccination Bill, introduced in the House of Commons on June 15th, by Mr. GROVES, states that no person shall be subjected to any penalty or loss or disability of any kind for refusing to be vaccinated or for refusing to cause any child or young person to be vaccinated. Clause 2 states that no payment in respect of vaccination shall be made out of any monies voted by Parliament or out of any local or general rate. Clause 3 repeals Sections 29 and 31 of the Vaccination Act, 1867, and Section 1 (3) of the Vaccination Act, 1898.

## HOUSE OF LORDS.

THURSDAY, JUNE 17TH.

### *Midwives and Maternity Homes Bill.*

THE Midwives and Maternity Homes Bill was read the third time and passed.

## HOUSE OF COMMONS.

WEDNESDAY, JUNE 16TH.

### *Medical Examination of British Seamen in New York.*

Colonel PERKINS asked the Secretary of State for Foreign Affairs the result of any representations made to the American authorities on the subject of the enforced medical examination of all British seamen sailing from these islands; and why any such treatment was necessary.

Sir CLEMENT KINLOCH-COOKE asked the Secretary of State for Foreign Affairs whether he was aware of a new regulation imposed by the New York port health authorities requiring the crews of British liners and other British seamen on arrival at New York to undergo medical examination by an American doctor before they were allowed to go on shore, and that such examination subjected the seamen to the necessity of undressing and other indignities; and whether he would take steps to approach the Government of the United States of America with a view to putting an end to a practice that was resented by British seamen.

Colonel DAY asked the Secretary of State for Foreign Affairs if his attention had been drawn to the fact that British seamen arriving at New York were being subjected to compulsory medical examination by the port medical officers; and, in view of the resentment expressed by the crew of the *Majestic*, would he cause representations to be made with a view to the withdrawal of this newly enforced regulation.

Sir HARRY BRITTAIN asked the Secretary of State for Foreign Affairs whether his attention had been called to the additional medical examination of sailors on British liners entering the port of New York; and whether, in view of the feeling which had been aroused on this matter, he could see his way to take up this subject with the authorities concerned.

Sir A. CHAMBERLAIN replied: The examination of the seamen took place under Section 105 (F) of the Immigration Laws and Regulations of 1925, which enables United States immigration officers to subject alien seamen to the same medical examination requirements as are imposed upon alien passengers. As at present advised, I do not consider that any useful purpose would be served by making representations to the United States Government.

Colonel DAY: Can the right hon. gentleman say whether the seamen of vessels flying other flags have been subjected to the same medical examination?—Sir A. CHAMBERLAIN: This is not a new law; but so far as I know the practice in this particular case is rather an exception to the usual practice.

Mr. B. SMITH: While it may not be a new law, it is certainly a new custom, and will the right hon. gentleman consider adopting measures in this country to retaliate against the action of the American authorities?—Sir A. CHAMBERLAIN: I would submit to the hon. gentleman that that suggestion is hardly conducive to the promotion of friendly relations between our two countries. I do not think that at the present time I can make any representations.

Dr. WATTS: Is the right hon. gentleman aware that the presence of small-pox in this country, and the fact that effective vaccination is a preventive against it, is one of the reasons for this examination to make sure that the men are properly vaccinated?—Sir A. CHAMBERLAIN: That may be true, but I am not aware of it.

Lieut.-Commander KENWORTHY: Will the right hon. gentleman represent to the United States authorities that it is repugnant to British ideas to examine seamen only, and not the officers of the ship?—Sir A. CHAMBERLAIN: I am not called upon to make any representations of that kind.

Mr. PALING: Is there any indication that this practice is likely to continue, or is it a solitary instance?—Sir A. CHAMBERLAIN: I think a succession of these questions would certainly ensure its continuance.

### *Training of Health Visitors.*

Mr. GRIFFITHS asked the Minister of Health the amount of money which had been paid by the Government in grants each year since 1919 towards the training of health visitors. —Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: The grants paid towards the training of health visitors since 1919 have been as follows: 1920–21, £2395; 1921–22, £1832; 1922–23, £1233; 1923–24, £1137; 1924–25, £890; and 1925–26, £567.

### *Foreign Pork and Public Health.*

Mr. WILLIAM THORNE asked the Minister of Health whether, seeing that under the Public Health (Meat) Regulations of 1908 it was decided to forbid the importation of what were known as box loins of pork from America, he would say when this ban was lifted; if he was aware that lately box loins of pork of a character similar to those banned in 1908 had been offered for sale in Smithfield; and what assurance could his department or the Smithfield inspectors give that the present imports were more fit for human consumption than those which were prohibited in 1908.—Mr. NEVILLE CHAMBERLAIN replied: The Public Health (Foreign Meat) Regulations of 1908 prohibited the importation of box loins of pork not bearing an official certificate of the country of origin which was declared by the Local Government Board to be admissible as evidence that the pork had been found by a competent authority to be free from disease, and otherwise to satisfy public health requirements. The official certificates of various countries have from time to time been declared to be admissible for this purpose. In the case of the United States of America the prescribed declaration of admissibility was published in the *London Gazette* on May 2nd, 1922. Before making this declaration, my predecessor satisfied himself that the certificate of the United States Government provided all the necessary guarantees for the safeguarding of the public health.

THURSDAY, JUNE 17TH.

### PUBLIC HEALTH IN SCOTLAND.

The House went into Committee of Supply on the Scottish Estimates, Captain FITZROY, Deputy Chairman of Committees, in the chair.

On a vote of £1,858,345 for the salaries and expenses of the Scottish Board of Health, including grants and other expenses in connexion with housing, grants to local authorities, grants in respect of benefits and expenses of administration under the National Health Insurance Acts, &c.,

Captain ELLIOT (Parliamentary Under-Secretary of Health for Scotland) said that the vital statistics for Scotland showed that the hope that had been expressed last year that the movement of the curves, which had been in an unfavourable direction in 1924, would not be maintained, that the lost ground would be recovered, and that they could look forward to a continuance of the improvement in the general vital statistics of the country which had been a feature of the last 50 years, and certainly an increasing feature of the past few years, had been realised. The general death-rate, which in 1924 was 14·4, had fallen to 13·4; and the infantile mortality, which in 1924 was 97 per 1000, had gone down to 90. The death-rate between one and five years had gone down from 15 to 12, and was equal to the rate for 1923, which was the lowest ever recorded in Scotland. Infantile mortality in its turn was less than for any previous year except 1921 and 1923, so that in the case of small children they had a mortality as low as they had ever registered before, and there were only two years in which it had been lower in the whole history of the country. A continuous fall such as they had seen in the mortality statistics of infants, children, and adults showed clearly that the general physical condition of the people was being maintained in spite of a long continued depression without parallel in the history of the country. That was reflected also in the tuberculosis rate, which had fallen from 80 per 100,000 in 1924 to 76, while in non-pulmonary cases it had gone down from 36 to 34. In both these cases the death-rate last year was the lowest that had ever been recorded in Scottish vital statistics. In the case of pulmonary tuberculosis the death-rate was not only the lowest ever recorded for Scotland, but it was a record for the whole of Great Britain. It was better than any other part of the United Kingdom. The English rate was 83 and the Scottish rate was 76, which seemed to show that the campaign that had been embarked upon was definitely beginning to bear fruit. They were not so fortunately placed with regard to non-pulmonary tuberculosis, but it might be that the various campaigns for cleaner milk and better food generally would have some effect in reducing that rate.

There was a large increase in the vote for housing. The position in that respect was improving, but although 8000 odd houses were built last year, that was still far below what was necessary for the needs of the people as a whole. But the numbers were going up, and for the first time they had touched and passed the figure of 1000 houses in a month. In May, 1175 houses were built and completed. In the case of rickets, although that disease was still very prevalent in the cities, there was a marked decline recorded by all the public health authorities, except those of Paisley. Rickets did not show that correlation with housing which one would expect; it was not specially associated with a poor standard of housing. It occurred among the better class of people as well as among the poorer artisan class. In considering Poor-law relief in Scotland, and the adequacy or inadequacy of the scales granted, as well as the tremendous weight of unemployment during the past few years, and the burden cast by the general strike and the coal stoppage, they had to remember that so far no irreparable damage had been done to the health of the people; the vital statistics were still moving favourably, and if they had sense they could continue to keep them moving in that direction.

Mr. STEPHEN, in moving to reduce the vote by £100, said with respect to the vital statistics they all knew that figures might prove anything. Because of the coal stoppage the Board of Health had felt it necessary to send a circular to the parish councils of Scotland, similar to that issued by the English Ministry of Health, indicating that it was more important to have regard to financial considerations than to the granting of adequate relief in cases of destitution. It was true that the circular drew attention to the necessity of adequate relief being given, but while they had to have that in view the Board said, "For Heaven's sake do not spend too much money in doing it." The circular suggested that there should be communal meals. The Glasgow parish council had taken the circular very much to heart, and had decided that relief should be given entirely in kind. There were over 1000 women and 2000 children dependents of miners who were being fed by the Glasgow parish council, and he protested strongly against the way in which the feeding was carried on. In his own division the infantile mortality figures were 164 per 1000. The Government, not content with murdering children, were evidently going to proceed now to murder the miners' wives who were unfortunate enough to live in that division.

### *The Question of Hospital Accommodation.*

Mr. STEWART asked the Government what their intentions were in regard to the report of the Committee appointed in June, 1924, and which reported in December, 1925. That Committee, which was presided over by Lord Mackenzie, considered the question of hospital accommodation in Scotland. The report pointed out that there were a large number of cases which required hospital accommodation, but that under present conditions they could not be treated. Very disastrous results followed all round. Many cases waited for months, sometimes as long as a year, and even longer. The lives of many of these patients might be saved if they had earlier treatment and earlier medical attention. The Committee estimated that there was a shortage of 3600 beds to meet the normal requirements of the people; 3000 of these beds were in general hospitals and 600 in connexion with maternity hospitals. No provision was made for patients suffering from certain infectious diseases. With regard to maternity cases, under the Notification of Births Act local authorities were made responsible where the people themselves were not in a position to provide the necessary medical and nursing attendance. Many of these births took place in one or two-roomed houses, and according to the medical evidence where complications ensued they were absolutely unsuitable for the carrying out of any operation. The Committee estimated that to meet these requirements at least 600 beds were necessary. They had heard that day from the Under-Secretary the tremendous advance which had been made in reducing deaths from tuberculosis, but at the same time he admitted that, so far as surgical tuberculosis was concerned, they were not progressing nearly so well. The Committee again drew attention to the fact that while Scotland, so far as sanatorium accommodation was concerned, was not on the whole badly served, more accommodation was required for the treatment of surgical tuberculosis in children. What was the Government doing in that direction? The Committee stated that, so far as the Poor-law hospitals were concerned, they were as well-equipped and as up to date as any general hospital throughout the country. But there was this difficulty that, because of the stigma attaching to the Poor-law in Scotland, the people would not use these hospitals and went to the infirmaries instead. He thought that steps should be taken as quickly as possible to divorce these hospitals from the Poor-law administration and to place them under the local authority in the same way as infectious diseases hospitals. While what he had said was true of Glasgow, it was not true generally of the whole country. The Committee condemned very roundly indeed the conditions obtaining in many of the so-called hospitals connected with the Poor-law. Nursing was bad, and proper medical attention could not be given. The accommodation was utterly insufficient and out of date, and the sanitary and hygienic arrangements were not what they should be. This was not the first time that the conditions of Poor-law hospitals had been brought to the attention of Parliament. In 1909, when the Royal Commission sat, the conditions in Scotland were condemned with regard to the standard of nursing in Poor-law hospitals. He hoped that the Government in the immediate future, where they had the power—and he thought they could act without further legislation—would force dilatory parish councils to take such action, either by themselves or in combination with other parish councils, as would afford a higher standard of treatment in these institutions than was at present being given. A large number of ailments were prevalent among school-children which required special medical attention and nursing. There were no hospitals under the control of the education authority to deal with these cases, and the Committee recommended that the local education authority should be made responsible, and that there should be a development towards providing beds for these children in hospitals over which the education authority would have some control.

He also wanted to draw attention to the conditions of the hospitals and medical service in the Highlands and Islands. There was a grant of £13,000 a year for medical services in the Highlands and Islands. But that sum was being more than taken up, and it was not sufficient to pay the medical officers for the extra attention which they were called upon to give, and there was nothing left to provide the hospitals which were required. The recommendation of the Committee was that, apart from Inverness, at least 100 beds ought to be provided forthwith. Successive Boards of Health for Scotland had shown some consideration for the improvement of the conditions under which the poorer people of the country lived, and this was now producing marked results, which would ultimately, in his opinion, pay for all the money spent in that direction. Good health meant everything; it meant intelligence and morality. If the body was physically diseased and not properly cared for they could not have that standard of life which was the ideal of everyone. He should like, therefore, to have an assurance from the Secretary for Scotland that he was alive to the necessity of the case, and that the Government would be prepared, even at some little cost, to take the necessary steps which would ultimately mean a still further development and improvement of health services in Scotland.

Mr. HARDIE also protested against the way in which the wives of miners and miners' children were being fed during the present stoppage in the mining industry in Scotland. He said that the Government had decided to put the most harrassing conditions possible on these people who applied for the scanty and rotten food which was supplied. Captain Elliot, who was a medical man, would understand the meaning of this. Dinner was at 4.30 P.M., and breakfast at 8 o'clock in the morning; a fast of 15 hours. The mothers, and particularly the pregnant ones, were harrassed by being brought out to the feeding centres twice a day.

### *Mental and Venereal Disease.*

Mr. SCRYMGEOUR urged that steps should be taken to provide additional accommodation at the institution for mentally defective children in Dundee. He would also like to know whether patients who had been treated in sanatoria for tuberculosis and had returned to their occupations had been subjected to a serious return of the malady which had necessitated their return to the sanatorium. As regarded the question of venereal disease, there had been in the municipalities an extension of the system of providing medical advice and treatment for cases which were voluntarily reported. Whether or not that step was bringing about all the good results which might have been expected from it they could not say, but it would be very helpful if they had some official information. The difficulties in the way of compulsory notification were considerable, but in view of the awful results of the disease not only to the patients themselves, but to succeeding generations, he thought there was a strong argument for compulsory notification. Some improvement was being effected in t treatment of mentally deficient adults, and those in charge of mental institutions were making arrangements to facilitate recovery by seeing that the patients were not brought too much in contact with one another. Specialists by constant study of a particular defect or weakness of the mind had produced wonderful results. He had given some attention to this matter, and although he admitted that improvements had been made in the conduct of these institutions, he was disappointed at the rate of progress. He was disappointed that they should still send to an institution a man who had been reported as liable to take the life of his wife, and had been duly certified. Although there was no further indication of any tendency of the kind, it was impossible to get a doctor to say that the man should be allowed out of the institution. He had found that the surroundings and the patients with whom he was brought in contact destroyed the slightest likelihood of any change for the better, and tended rather to make things go from bad to worse. By treatment in a private institution, where care, consideration, and study could be given to each patient's particular weakness, more substantial results could be obtained. Certainly this subject called for steps a long way in advance of those already taken.

Mr. Sullivan complained that the Government this year were reducing the amount for the treatment of tuberculosis by £5000, in spite of the fact that they knew that it took years of work to effect an improvement in dealing with this disease. They were beginning to turn back the hands of the clock in this important matter. They had also been very successful in dealing with venereal disease. If the good work was kept up they might be able to stamp out that disease, but he saw from the report that the amount of money for this purpose was reduced by £6000.

Captain Elliot said that that was only a nominal reduction of the money spent, and was due to more closely estimating the amount required. No actual reduction was being made.

Mr. Sullivan said he had too much experience to be put off with that sort of answer. The result of saving in 1926 would be that tuberculosis and venereal disease would increase, and more money would be required later. He also noticed that under the heading, "Medical Benefit—Grant in Aid," there was a decrease of £44,000. It was £229,000 in 1925. The authorities must have done pretty well if they could spare that amount. In this thing, which the Government called economy, they were interfering with the chance of life of the people they represented.

Mr. William Graham said he trusted that in any circular that the Government issued to the Scottish local authorities they and the authorities themselves would make it perfectly plain that these services in Scotland—services of public health and venereal disease, and certain other services—were comparatively new for the purposes of grant, and beyond all doubt in Scotland there was a vast field to overtake in respect to them; that the tendency of recent legislation had been to throw extra burdens on the local authorities, and that so far the principle of ability to pay was not so strict in local rating. All these things should be pressed in any representations from Scotland on this very important subject. He was very much afraid from an administrative point of view that the pass might be sold. If the Government decided upon some form of block or overhead grants it was perfectly plain that in Scotland that must mean, unless these services were to be curtailed, extra burdens for many local authorities. It was also perfectly clear that these burdens would fall with cruel weight on the poorer and more crowded and densely populated areas which were already carrying the tragedy of more than four years of industrial distress.

### *Scottish Secretary's Reply.*

Sir J. Gilmour (Secretary for Scotland), replying to the debate, said that with regard to hospital accommodation in Scotland he was aware that the Committee, presided over by Lord Mackenzie, had presented a report which was deserving of the very closest consideration. All he could say at the moment on the general problem was that the Board of Health were taking the matter into their closest scrutiny, and he hoped that they might be able in the course of time to provide an increased number of beds. This year they were making a grant to institutions in the Stornoway area to meet part of this problem. These grants only affected places where they hoped to do more, and they were quite alive to the necessity of doing all they could in that direction. With regard to sanatorium treatment of tuberculosis, and things connected with it, what they had done had not quite realised all the hopes they expected, but he thought he could say that they were making progress with that problem. Some progress was also being made in regard to the treatment of venereal disease. One of the most practical parts of the success of that treatment was that the individuals concerned must submit themselves to treatment if the fullest advantage was to be obtained. The remarks made on certain aspects of mental cases would also be carefully considered. He was not losing sight of the peculiar circumstances of Scotland and the more special claims she had upon the resources of the country in connexion with housing. As regards the points raised in the very interesting speech of Mr. W. Graham, he was sure that the right hon. gentleman would not expect him to make any declaration on a subject which was sub judice at the moment. Some hard things had been said about Poor-law relief. The duty of the Government was undoubtedly to give the parish councils guidance at a time like the present, and in accordance with that duty and in consultation with the Minister of Health these instructions had been issued. He did not think that they could be shown to be in any sense harsh or unfair, nor indeed when one came to consider how the parish councils throughout Scotland had faced the difficulties and responsibilities which had been thrown upon their shoulders, could one honestly say that they had been administered in a harsh or cruel or vindictive spirit. A great deal had been said about the hardship caused to women being unable to go long distances to attend the centres, but in such cases arrangements had been made for the food to be sent to their own homes.

The amendment and the original motion were withdrawn.

### *Pensioners and War Neurosis.*

Mr. Robert Young asked the Minister of Pensions what number of pensioners were receiving treatment for war neurosis and other shell-shock complaints; and whether the treatment given was wholly in Ministry of Pensions hospitals or otherwise.—Major G. C. Tryon replied: In April last there were some 3350 of these cases undergoing treatment. Of these cases, with the exception of 300 who are receiving treatment in their own homes, and 61 being treated in or at civil institutions medically approved by the Ministry, all the cases were being treated in hospitals or at clinics owned or under the medical control of the Ministry.

### *Whole-time Medical Officers of Health.*

Lieut.-Colonel Fremantle asked the Minister of Health if it was the policy of the Ministry to secure the replacement of general medical practitioners by specialist medical officers of health throughout the country as and when possible; what was the proportion of whole-time to part-time medical officers of health when this policy was originally adopted by the Local Government Board in 1872; and what was the proportion now.—Mr. Neville Chamberlain replied: It is the general practice of my department to approve, where possible, the appointment by local authorities of whole-time medical officers. As regards the remainder of the question, a Parliamentary return, published in 1873, shows that for England and Wales the proportion of whole-time appointments was about one-quarter. At the present time the proportion is slightly over one-third, the number of authorities having considerably increased.

### *General Practitioners and Preventive Medicine.*

Lieut.-Colonel Fremantle asked the Minister of Health if he proposed to utilise general medical practitioners for the prevention as well as cure of disease in the community in his reorganisation of the public health system and his proposals for reform of the Poor-law; and what steps he was taking to improve education in the medical curriculum accordingly.—Mr. Neville Chamberlain replied: In common with my predecessors, I have always been anxious that general practitioners should take their full share in preventive medicine, but the proposals for the reform of the Poor-law will not affect the responsibilities of general practitioners in this regard, and as at present advised I see no necessity to invite my noble friend the Lord President to advise the General Medical Council to consider any further modification of the medical curriculum with this object in view.

### *Optical Appliances for Insurance Patients.*

Sir Arthur Shirley Benn asked the Minister of Health whether he was aware that certain approved societies had made arrangements with the Joint Council of Qualified Opticians and the National Association of Opticians for the supply of spectacles to their members; and whether he would see that the free choice of an optician by members was not interfered with.—Mr. Neville Chamberlain replied: I am aware that some approved societies have made arrangements with organisations of opticians for regulating the quality and price of optical appliances to be supplied to members of the societies who are entitled to ophthalmic benefit as an additional benefit under the National Health Insurance scheme. Having regard to the fact that at present it is open to any person to supply spectacles to the public, although possessing no particular qualifications, I see no reason, as at present advised, to interfere with arrangements which are designed to protect the interests of insured persons by securing that articles of a satisfactory quality shall be obtained at a reasonable price

### *Maternity and Child Welfare Centres*

Mr JOHN PALIN asked the Minister of Health the number of maternity and child welfare centres in existence in England and Wales at the present time, and the figures at this time last year —Mr NEVILLE CHAMBERLAIN replied: On June 1st, 1926, there were 2403 maternity and child welfare centres known to my department in England and Wales, as compared with 2385 on the corresponding date last year

### *Imports of Condensed Skimmed Milk.*

Mr HURD asked the Minister of Agriculture how much condensed skimmed milk had been imported this year from countries where animal diseases were rife; what this volume represented in liquid milk; and how it compared with the imports from those countries for the corresponding period in 1925 and 1924 —Mr WALTER GUINNESS replied I am advised that the temperatures to which this condensed milk is subjected in factories on the continent are sufficient to destroy the virus of foot-and mouth disease and the tubercle bacillus. The imports of sweetened condensed skimmed milk from countries in which there has been a considerable amount of foot-and-mouth disease have been as follows:—

| | Cwts | Approximate equivalent in liquid milk (gallons). |
|---|---|---|
| January to May, 1926 | 734,132 | 24,065,000 |
| „ „ 1925 | 634 086 | 20,786 000 |
| „ „ 1924 | 569,377 | 18 065,000 |

The trade returns do not separately distinguish the imports of non-sweetened condensed skimmed milk. So far as I am aware, other animal diseases are not especially prevalent in countries from which imports of condensed milk are obtained

### *Expenditure on Medical Services in Kenya Colony*

Dr SHIELS asked the Secretary of State for the Colonies whether he had noted the recommendation made by the acting governor of Kenya Colony, in the report of his official tour through the provinces in 1922, that it would be both unwise and unjust to restrict Government expenditure for educational and medical services, on the ground that the people were taxing themselves for those purposes through their native councils, and whether he would state how far the principle thus recommended had been observed —Mr AMERY replied: Yes, Sir I have noted the recommendation, and while I cannot give a categorical reply to the last part of the question, I can assure the hon. Member that the expenditure on native educational and medical services is increasing

Dr SHIELS asked the Secretary of State for the Colonies what steps had been taken to meet the recommendations made by the Kenya Economic and Finance Committee, in its Interim Report on Native Labour in 1925, that steps should be taken to lessen the high death-rate amongst the natives by an increase of the medical services in the reserves. —Mr AMERY replied The total medical provision has been increased in the 1926 estimates from £131,031 to £178 961 Among the increases are 10 medical officers and two sanitary overseers for the native reserves, and six nurses, two male orderlies, and a large number of native attendants for native hospitals.

## FRIDAY, JUNE 18TH.

### *Cost of Domiciliary Poor-law Relief*

Mr WHITELEY asked the Minister of Health whether he could state the total remuneration of relieving officers and other officers employed in connexion with domiciliary relief, excepting medical officers, dispensers, and other persons employed in the treatment and care of the sick for the years 1923–24, 1924–25, and 1925–26 —Mr N CHAMBERLAIN replied: The total remuneration (salaries, rations, &c., and superannuation allowances) of relieving officers and other officers employed in connexion with domiciliary Poor-law relief in England and Wales, excepting medical officers, dispensers, and other persons employed in the treatment and care of the sick, was £1,017,709 during the year 1924–25 and £981 000 during the year 1923–24 The figures for the year 1925–26 are not yet available.

### *Maintenance and Treatment of the Insane*

Mr WHITELEY asked the Minister of Health the amount of expenditure on the maintenance of lunatics in lunatic asylums during the years 1924–25 and 1925–26.—Mr N CHAMBERLAIN replied: For the financial year 1924–25 the amount of expenditure on the maintenance, supervision, and treatment of the insane in county and borough mental hospitals in England and Wales was £9,510,639 This amount does not include any expenditure in respect of loan charges, repairs, additions, and alterations of buildings, or purchase or rental of land and buildings. Particulars are not yet available for 1925–26

### *Bodies Removed to Medical Schools*

Mr WHITELEY asked the Minister of Health the number of bodies removed to medical schools in England and Wales for the purpose of anatomical examination and operative surgery during the years 1924 and 1925 —Mr N. CHAMBERLAIN replied: The number of bodies removed to medical schools in England and Wales for the purpose of anatomical examination and operative surgery was 510 during the year 1924 and 581 during the year 1925

### *Remuneration of Poor-law Medical Staff*

Mr WHITELEY asked the Minister of Health the approximate remuneration of Poor-law medical officers, dispensers, and nurses during the years 1923–24, 1924–25, and 1925–26 —Mr N CHAMBERLAIN replied: The money payments to Poor-law medical officers, dispensers nurses, and other officers employed in the treatment or care of the sick in England and Wales amounted to £1,500,021 during the year 1923–24, and £1,553,000 during the year 1924–25 The figures for the year 1925–26 are not yet available.

## MONDAY, JUNE 21ST

### *Royal Asylums and Income-tax.*

The House went into Committee on the Finance Bill, Mr J F HOPE in the chair

Sir R. HUTCHISON moved the following new clause providing that (1) exemption shall be granted (*a*) from income-tax under Schedule A in respect of lands, tenements, hereditaments, and heritages owned and occupied by a royal asylum for lunatics and mental patients, not being such lands, tenements hereditaments, or heritages as are mentioned in No. VI. of Schedule A; (*b*) from income-tax under Schedule B in respect of lands occupied by a royal asylum for lunatics and mental patients, (*c*) from income-tax under Schedule D in respect of any profits derived by a royal asylum for lunatics and mental patients. (2) The exemption granted by paragraphs (*a*) and (*b*) of Subsection (1) of this section shall not extend to tax in respect of any rent payable or other annual payment to be made by a royal asylum for lunatics and mental patients in respect of lands, tenements, hereditaments, or heritages which are in the use and enjoyment of a person whose total annual income from all sources, estimated in accordance with the provisions of the Income-tax Acts, amounts to not less than £150 (3) Exemption shall not be granted under this section to a royal asylum if the receipts from private patients are in excess of the receipts from pauper patients. He said that these royal asylums in Scotland had been subscribed to by the public. They were run for no profit and the funds had been administered by individuals who had given their time for no remuneration. These asylums had in many cases saved the parish council large capital expenditure in that they accepted at a very low rate, and catered for, patients sent to them by those parishes. In later years the work of those asylums had been added to by a large number of cases from the parish councils so that these asylums were not only doing the charitable work which they were originally intended to do, but they were also doing a public work in taking those patients from the various parish councils. Any surplus which their funds might show at the end of a year was devoted entirely to reducing the rates which were charged to the various patients, as well as to the maintenance of the buildings and to generally developing these very good institutions. There were also one or two smaller institutions —they were not really royal hospitals, but district asylums —which to-day were exempt from the very tax from which he was trying to induce the Chancellor of the Exchequer to exempt these royal asylums At the present moment these district asylums were only exempt under Schedule D and it seemed very hard that these royal asylums should not be so treated. Under a royal charter in 1913 they were given the duty of looking after the patients coming from public authorities, and for that reason he thought they were entitled to be exempt from many of the items on which they were now assessed. They took patients who otherwise would cost a very large sum of money, and, further than that, they subscribed towards paying part of what otherwise would be charged to poor patients, to the necessitous mental cases who were sent there and could not afford to pay the nominal rate Those cases were taken by the royal asylums at a special low rate, below the actual cost This showed that these asylums were within the category of charitable institutions He thought that the chief reason why some of them were at present charged income-tax was because they accepted private patients. They undoubtedly accepted private patients, but the whole of the profit that came from those private patients went towards reducing the rates charged to other people, and helped the unfortunate patients who could not pay any fees at all. It also assisted in reducing the rate charged to the parish councils. Further than that, farms were also run in connexion with these institutions, and these farms had produced a surplus, but the farms were part of the cure of the mental cases, and they also produced the food required by these royal asylums. The general administration of these institutions came well within the definition of a "hospital" within the meaning of the Act.

Mr. Churchill said that he regretted that he was not in a position to accept the proposal, much as he would like to do so. He readily admitted the many substantial arguments which had been adduced in support of the new clause, but at the present time they gave a very wide exemption to charity, much wider than the Royal Commission on Income-tax had recommended. They gave, in fact, an immense exemption, which cost the revenue over £10,000,000 a year. The question arose as to where they were going to draw the line and he found great difficulty in widening the scope of the exemptions now granted to charities. In order to restrict those exemptions within some bounds which would not make very serious inroads on the revenue, certain conditions had been insisted on. They were not the conditions which the Royal Commission thought ought to be insisted on, but they were the only bulwark which the revenue had against an altogether indefinite variety of arguments for the extension of these exemptions. The courts had laid down that in the case of a hospital or charity exemption only applied to institutions maintained to a great extent by charitable endowments or subscriptions. It was not sufficient to say that they were not working for a profit, but they must be maintained to a great extent by charitable endowment. There were several of these royal asylums in Scotland, but there were only two of them which escaped these provisions—Montrose and Aberdeen. He thought for the sake of meeting the difficulties of these two hospitals, it would be a very serious thing for them to throw over the whole of the existing basis of the exemptions from income-tax. His hon. friend had spoken about the district asylums, but they differed from these two royal asylums, in that they depended to a substantial extent on money from charitable sources. He was afraid in all these circumstances it was impossible for him to meet the proposal of his hon. friend. The whole question of charitable relief, notwithstanding the somewhat adverse recommendation of the Royal Commission, might well be a subject of future reflection. There was no doubt that even trying to draw the lines where they had to be drawn—and some lines must be drawn—a number of hard cases, borderland cases, must arise. If at any time it was possible to take a more liberal view of those borderland cases, that ought to be done, not on a variety of special institutions such as had been mentioned that day, but as a result of a comprehensive and general consideration of the question and of a successful attempt to lay down more harmonious limiting principles which would prevent indefinite exemptions from the law.

The clause was negatived without a division.

### *Benefits to Nursing Mothers.*

Sir Charles Wilson asked the Minister of Health if he would consider favourably an extension of benefits to nursing mothers from one to three months.—Mr. N. Chamberlain replied: Under the National Health Insurance Act an insured married woman is entitled to receive, in addition to the maternity benefit payable in respect of her husband's insurance, a second maternity benefit on condition that she abstains from work for a period of one month after her confinement, but thereafter no further benefit is payable unless she is incapable of work. As a result of the second valuation of approved societies the average rate of maternity benefit has been increased from 40*s.* to 46*s.*, and consequently the total amount which the woman will receive will be £4 12*s.* on the average. I understand the suggestion of my hon. friend to be that this period of one month should be extended to three months, with a corresponding increase in the amount of the benefit, where a woman abstains from work in order to suckle her infant. This would impose a considerable further burden on insurance funds, and I do not see my way to introduce the necessary amending legislation, particularly as no such proposal is included in the recommendations of the recent Royal Commission on National Health Insurance.

### *Births and Deaths Registration Bill.*

The Births and Deaths Registration Bill, as amended in Standing Committee, was considered on report.

Mr. Basil Peto moved the following new clause: (1) The death of any person shall not be registered unless and until there has been delivered to the registrar of the district in which such death has occurred a certificate, signed by a medical practitioner, of the fact of death and of the cause of death, as respectively in this Act defined, and such certificate shall be given only after he has inspected the body. (2) It shall be the duty of the General Medical Council to establish a fund by equal annual contributions from all persons on the Register who are actually practising, from which such fee as they may decide shall be paid to every medical practitioner for each inspection and certificate. He said that one would have thought that in a Bill of this kind the very first consideration would be that the registrar should have definite proof by medical evidence that a person in regard to whose death he was required to grant a certificate was in fact dead. But in this Bill there was no condition whatever that any medical officer who viewed a body should certify that the person was actually dead. Under Clause 7, which dealt with the registration of still-births, there was a provision that the body of a still-born infant should be inspected by a medical man. In the larger question the same should apply. In previous Bills there had been an attempt to insert such a provision, but the question had always been as to who should pay. The local authorities did not want to be burdened. The medical profession took the view that it was in the interests of somebody else and not in the interests of the medical profession, and therefore clearly somebody else should pay. That was a view with which he had a certain sympathy, and he thought that he had arrived at a method by which to cut the Gordian knot by recognising exceptional cases. He thought that in 99 cases out of 100 the fee for the inspection of a body under this Bill would not be disputed by anybody, and would be paid as a matter of course. There were, however, cases of medical practitioners with large practices who visited a very great number of poor people in crowded centres, like the East End of London, where they would have to make a good number of inspections during the year, and where in a considerable number of cases it might be very difficult or impossible for those who came after the deceased to pay more than the absolutely necessary expenses. It was a very small thing to ask the whole body of medical practitioners to form a sort of pool. By a quite minute contribution from each of them annually they could form a fund from which poorer practitioners, who had most of these inspections to make, could draw a reasonable fee as recompense for their loss of time. There was also the case of doctors practising in sparsely populated rural districts, where a single inspection might involve a good deal of time and expense.

Mr. Groves seconded the proposed new clause.

Captain Elliot (Parliamentary Under-Secretary for Health, Scotland) said this was a Bill which had been prepared and gone into with very great care, and had passed through all its stages so far after a careful examination by a Standing Committee of the House. It was supported by members of all parties. It would not be possible for the Government to accept this clause, and if it was passed the result would be to wreck the Bill and bring to naught all the work which had been put into it both in the House and outside.

The clause was still under discussion when, under the rules of the House, the debate was adjourned.

## TUESDAY, JUNE 22ND.

### *Waterproof Sandpaper in Painting Industry.*

Lord Henry Cavendish-Bentinck asked the Secretary of State for the Home Department how many master painters had caused waterproof sandpaper to be employed in rubbing down; how many were still using it; and whether he had any information as to their views on its practical value as a substitute for dry rubbing down in the painting of houses, interior and exterior.—Captain Hacking replied: I regret I am unable to furnish the precise information asked for in the first part of this question, but the inquiries my right hon. friend has made indicate that the new process has not been adopted yet to any great extent. As regards the last part, I would draw the attention of the noble lord to the letter which appeared in the *Times* on the 10th inst. from the secretary of the Painting Trade Materials Committee of Great Britain and Ireland, in which he states that a considerable number of painting trade firms have found a new process both satisfactory as a preventive of lead dust and economical in cost. I understand that this has been the general experience of firms carrying out painting work for the Office of Works which, as the noble lord will be aware, prohibits the use of dry rubbing down in all its painting specifications.

### *Milk and Dairies Order.*

Colonel Day asked the Minister of Health, in view of the urgency of the matter, when he proposed to issue the proposed new Order in connexion with the supply of milk.—Mr. N. Chamberlain replied: I regret that I cannot give any precise date for the issue of the Milk and Dairies Order, but I hope to be able to make the Order very shortly.

# Medical News.

UNIVERSITY OF GLASGOW.—The Graduation ceremony took place on June 23rd. Prof. Archibald Young delivered an oration on Sir William Macewen, busts of whom were presented to the University and to Lady Macewen. The following degrees were conferred in the Faculty of Medicine:—

*M.D.*—With honours: John K. Rennie and George M. Wishart. With commendation: Walter P. Grieve. Ordinary degree: William K. Anderson, James S. Bissett, and David Robertson.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

*Part I., including Forensic Medicine and Toxicology*.—Edward C. Bernard, Juan M. Camps-Campins, Alfred J. McD. Grimston, and Thomas M. White.

*Part I. only*.—Douglas E. C. Andrew and Hubert E. C. Bentley.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.—The council will hold its next meeting in Prague on August 20th. Following the business there will be meetings and social functions to which any medical women will be welcome. The agenda of the open meetings include discussions on (1) tuberculosis and pregnancy, (2) women police surgeons. It is hoped that some members of the Medical Women's Federation of Great Britain will include Prague in their holiday itinerary. Further particulars may be obtained from the Secretary of the Association, Miss M. I. Robertson, 28, Weymouth-street, London, W. 1.

HARVEIAN SOCIETY OF LONDON.—The annual dinner of the Harveian Society was held at the Connaught Rooms, London, on Thursday, June 17th, when the President, Mr. Laming Evans, took the chair at a well-attended gathering of members and their guests. The toast of "The Harveian Society" was proposed by Sir Archibald Garrod, who congratulated the Society on its ancient foundation and its present prosperity, and was responded to by the President. Mr. Laming Evans, after alluding to the ups and downs of the Society during a history of 95 years, pointed out that membership appealed to general practitioners, consultants, and specialists, the net of the subjects chosen for discussion being widespread. He was glad to say that the attendances at the meetings had recently considerably increased, and concluded by announcing the institution of the Buxton Brown Prize Essay, consisting of a medal together with a sum of £50 to be awarded biennially. The essays, he said, "would be adjudicated upon by two assessors, who would receive a handsome honorarium, and by the President who would receive none." The subject of the first competition he announced as "The Ætiology of High Blood Pressure and of the Respiratory Phenomena associated with it and with Chronic Nephritis," an apt choice of subject in a Society named after William Harvey, for the great master, though living to 70 years of age, was a martyr to gout and high blood pressure—circumstances which Mr. Laming Evans guessed "might be associated with the perquisites of office as physician-in-ordinary to Charles I., one of which was a diet of three dishes of meat a meal with all incidents thereunto belonging."

The toast of "The Guests" was proposed by Dr. Walter Jagger, who, in a humorous speech, referred to the representative nature of the guests and invited the most prominent of them, the Secretary of State for War, to explain the deductive and inductive reasons for the Christian name which he shared with his brother, their President. Sir Laming Worthington-Evans thanked the Society for its hospitality, and pointed out that he would leave the questions of induction and deduction to other speakers who were to reply to the toast. Sir John Rose Bradford reminded the audience that Harvey considered material refreshment a very fitting accompaniment to scientific discussion, but added that owing to depreciation in values Harvey's actual bequest to the Royal College of Physicians of London for the purpose of feasting was now represented by the purchase of a bag of macaroons. Sir Oscar Warburg, chairman of the London County Council, who also replied to the toast, closed the evening with an encouraging message as to the wonderful effect that medical effort had produced in our vital statistics.

The guests included, in addition to the speakers, Sir Richard Glazebrook, Sir John Lithiby, Sir Frederick Butler, Sir StClair Thomson, Sir Holburt Waring, the Mayor of Paddington, the Master of the Society of Apothecaries (Dr. Vincent Dickinson), the President of the Hunterian Society (Mr. A. E. Mortimer Woolf), the West London Medico-Chirurgical Society (Mr. H. W. Armstead), the Chelsea Clinical Society (Dr. Seymour Price), Sir Squire Sprigge, and Dr. Charles Buttar.

PEOPLE'S LEAGUE OF HEALTH.—The general meeting will take place at the Mansion House on Monday, July 5th, at 4.30 P.M., the Lord Mayor of London presiding. The speakers will include Dr. E. Farquhar Buzzard and Prof. Edgar L. Collis.

UNIVERSITY OF LEEDS.—Dr. R. D. Passey, lecturer in pathology at the Welsh National School of Medicine, has been appointed to the new chair of Experimental Pathology and to be Director of Cancer Research and Mr. Bryan Austin McSwiney to the chair of Physiology (from Manchester).

CHURCH MISSIONARY SOCIETY: *Medical Mission Auxiliary*.—The annual meeting will be held in the Central Hall, Westminster, at 7.30 P.M. on June 29th. The chair will be taken by Major-Gen. Sir Richard H. Luce, and the speakers will be Rev. H. T. Marrable, M.B., B.Ch. Dub., late of Persia, Dr. E. Villiers Hunter, of Uganda, and Dr. C. Vosper, of Srinagar, Kashmir. Tickets for admission can be obtained on application to the Loan Department of the Society, Salisbury-square, London, E.C. 4.

THE LATE DR. W. O. JONES.—The death took place on June 16th of William Owen Jones, of the Downs, Altrincham, the oldest and one of the best known medical men in North Cheshire. He was a student at the Manchester Medical School and at St. Mary's Hospital, and qualified M.R.C.S. in 1861. After qualification he acted as senior house surgeon and resident medical officer at the Manchester Royal Infirmary. A native of Bala, Merionethshire, he settled in Bowdon, Altrincham, where he practised for more than 60 years, retiring from practice two years ago. He was in his eighty-sixth year.

UNIVERSITY OF OXFORD: *Radcliffe Prize*.—The next award for this prize will be in the year 1927. The prize, which is of the value of £50, is awarded by the Master and Fellows of University College every second year for research in any branch of medical science. It is open to all graduates of the University who have proceeded, or are proceeding, to a medical degree in the University. Candidates must not have exceeded 12 years from the date of passing the last examination for the degree of Bachelor of Arts, and must not, at the date of application, be Fellows on the Foundation of Dr. John Radcliffe. Candidates must send in their memoirs to the Secretary of Faculties, at the University Registry, on or before Dec. 1st, 1926.

BRUSSELS UNIVERSITY MEDICAL GRADUATES' ASSOCIATION.—At the annual meeting of the Association, held at 147, Harley-street on June 9th, it was decided to change the name of the Association to "The Brussels University Medical Graduates' Association." The annual dinner will take place in October, when new members will be welcomed. Particulars of the new medal of the Association, either in gold or silver gilt and enamel, may be obtained from the hon. secretaries. The following officers were elected:—President: Dr. Fielden Briggs. Vice-President: Sir Thomas Carey Evans, M.C. Council: Dr. Robert Wilkinson, Dr. Arthur Cowburn, Dr. Eustace Callender, Dr. Edward Smallwood, Sir Bruce Bruce-Porter, Dr. Bryce Macaulay, Dr. R. W. Brimacombe, Dr. Russell Corfield, Dr. Mainwaring Hughes, Dr. Langford Campbell, O.B.E. Hon. Treasurer: Dr. James Metcalfe. Hon. Secretaries: Dr. Arthur Haydon, Dr. A. D. Woolf.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Mr. Doyne will give a clinical demonstration in ophthalmology for the Fellowship of Medicine on Thursday, July 1st, at 12 noon, at the Royal London Ophthalmic Hospital (Moorfields), City-road, E.C. This demonstration is open to the medical profession without fee. The Prince of Wales's General Hospital will hold a vacation course from July 19th to July 31st, occupying the whole of each day. The course will consist of clinical and laboratory methods, demonstration of groups of selected cases, general hospital work, and clinical lectures dealing with various subjects. From July 5th to July 17th the National Hospital for Diseases of the Heart gives an intensive course, and between the same dates the Hospital for Diseases of the Skin, Blackfriars, holds an afternoon course. The West End Hospital for Nervous Diseases will begin a four weeks' late afternoon course comprising lectures and clinical demonstrations upon selected cases at the out-patient department, 73, Welbeck-street, W. From July 12th to July 24th the Royal Eye Hospital will start a series of demonstrations on eye diseases from 3 P.M. daily. During August the following courses will take place: In medicine, surgery, and the specialties at Queen Mary's Hospital (Stratford); diseases of the chest, Brompton Hospital; and diseases of children, Queen's Hospital, Hackney. All of these courses will be all-day ones. Copies of all syllabuses, of the General Course [illegible] copies of the *Post-Graduate Medical Journal* may [illegible] application to the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

The annual dinner of past and present students of St. Mary's Hospital Medical School will be held at the Connaught Rooms, Great Queen-street, London, W.C., on Monday, Oct. 4th, at 7 for 7.30 P.M.

Royal National Hospital for Consumption, Ventnor.—The medical report for last year shows the clinical results as improvement in 64·7 per cent. of cases, "no change or worse" in 33·4 per cent., and deaths in 1·9 per cent. Of the early cases 93 per cent. improved; of the intermediate ones 80 per cent.; in the advanced cases, representing 72·7 per cent. of the total, the percentage of improvement was 51·7.

Extension of the Hartlepools Hospital.—The new "Morison Wing" of this hospital is to be opened by Princess Mary in August. The accommodation will be increased from about 60 to 90 beds, and the Red Cross Society and the Order of St. John have contributed £5000 towards the cost. There will be male and female medical wards, a children's ward, and accommodation for the whole of the nursing staff.

St. Thomas's Hospital Medical School.—The distribution of prizes took place on June 22nd, Sir Arthur Stanley, treasurer of the hospital, presiding. Sir Cuthbert Wallace, dean of the medical school, spoke of the athletic as well as the academic successes of the year. This year six cups had been won. The Bristowe medal and the Mead medal were won by Mr. R. B. Alston, who had since died of septic poisoning. Sir John Bland-Sutton distributed the prizes. He recalled the inspiring history and traditions of the hospital and congratulated the authorities on the wise policy that welcomed those trained elsewhere to positions on the staff if it seemed desirable.

International Congress for Life-saving and First-aid to the Injured.—The third international congress will be held in Amsterdam from Sept. 7th to 11th. A British section has been formed under the presidency of the Duke of York to arrange for the representation of this country at the congress, and it is hoped that a large number of members will attend. It is proposed to form a party to travel from England, and reduced fares will be available. A provisional programme of the congress has been issued. Lectures, discussions, and international competitions in life-saving and first-aid will be held, and various societies interested, such as the St. John Ambulance Association and the National Fire Brigades Association, will send teams to compete. Full details can be obtained on application to the General Secretary, Miss M. A. Harvey, at 7, Cambridge-street, Hyde Park, London, W. 2.

The late Rev. Dr. Henry Charles Packard.—The Rev. Dr. Packard, who died recently at Kedleston, of which place he was rector, was born in East Anglia in 1856 and was educated at Trinity College, Dublin, where he graduated in arts in 1885, in medicine and surgery in 1895, and proceeded to the M.D. degree in 1897. From 1882 to 1885 he was curate at Walthamstow and in the following year held a similar position at Homerton. Two years later he went to China as a missionary, where he was engaged in hospital construction and in furthering the crusade against leprosy. In 1898 he was again in this country as curate of St. Matthew's, Ealing Common, and later became priest and tutor to the Wadhurst Hall Mission in East London. For two years he was chaplain and physician to Hanwell County Asylum and in 1924 received the living of Kedleston. Dr. Packard was a man of lovable disposition, who took for his watchwords kindness, toleration, and forgiveness. He leaves a widow and four sons.

The late Dr. Horatio W. A. Cowan.—The death of Dr. H. W. A. Cowan occurred with tragic suddenness on May 28th in his house at Fitzroy-square. Dr. Cowan was born at Inverness 52 years ago. He received his medical education at Aberdeen University and St. Bartholomew's Hospital, London. He qualified M.B., C.M. Aberd. in 1895, taking the M.D. degree in 1909. After qualification he came to London, and for two years was assistant to a general practitioner. While so occupied he managed to find time to hold clinical appointments at the Throat Hospital, Golden-square, Moorfields, and the Hospital for Consumption, Brompton. Subsequently, he visited Australia and New Zealand as surgeon on a White Star liner, and afterwards entered the Royal Navy. He resigned in 1900 to settle in practice in Fitzroy-square, where he continued until his death. He built up a large practice and was deservedly popular, for he was a hard worker, a most sympathetic doctor, and in every way up to date, reading largely professional subjects and giving much anxious thought and care to his patients. He was beloved by all, and his untimely end is a source of sorrow to the whole neighbourhood. His interests, besides professional, were varied and included yachting and motoring. He leaves a widow, one daughter, and a son who succeeds him in the practice.

The Office Français du Tourisme informs us that, contrary to rumours which have appeared in the press, no Government restrictions affecting the convenience of foreign tourists or limiting the consumption of petrol are to be anticipated.

The New Westminster Ophthalmic Hospital. The removal (and consequent enlargement) of this hospital from Charing Cross to the new freehold site in Broad-street, W.C., will involve the expenditure of at least £50,000 beyond the available resources and the Duke of Connaught, the President, is supporting an appeal for that amount.

Research Defence Society.—The annual general meeting will be held at the House of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. 1, to-day (Friday), June 25th, at 3 o'clock, Lord Lamington, the President, in the chair. An address will be given by Dr. J. A. Murray, F.R.S., Director of the Imperial Cancer Research Fund, on the Experimental Attack on Cancer. The report contains the formal expression of deep regret at the death of the founder of the Society, Mr. Stephen Paget. The audited accounts for the year ending Dec. 31st, 1925, show a marked improvement in the financial position of the Society in response to much vigorous work.

Rockefeller Medical Fellowships.—The Medical Research Council announce that on behalf of the Rockefeller Foundation they have made the following awards of Medical Fellowships provided by the Foundation and tenable in the United States of America during the academic year 1926–27: Geoffrey Bourne, M.D. Lond., M.R.C.P., first assistant in the Medical Unit, St. Bartholomew's Hospital, London; Hugh William Bell Cairns, M.B. Adelaide, F.R.C.S., assistant surgeon, London Hospital; Miss Rosalie Evelyn Lucas, M.B. Bristol, clinical assistant, Maudsley Hospital, London; Ronald Douglas Mackenzie, M.B. Edin., M.R.C.P. Edin., lecturer in pathology, University of Edinburgh; Carl Frederick Abel Pantin, M.A. Camb., assistant physiologist, Marine Biological Laboratory, Plymouth; Arthur Frederick Bernard Shaw, M.D. Trin. Coll. Dub., F.R.C.P.I., lecturer in pathology, University of Durham; James Calvert Spence, M.D. Durh., M.R.C.P., medical registrar and chemical pathologist, Royal Victoria Infirmary, Newcastle-on-Tyne; Harry Ellis Charter Wilson, M.B. Glasg., assistant in chemical physiology, University of Glasgow. Dr. Lucas and Mr. Pantin have been appointed on modified conditions while holding scholarships or emoluments from other sources.

Royal Sanitary Institute.—At the Congress to be held in London on July 5th to 10th, the Minister of Health presiding, the jubilee of the Institute will be celebrated. Over 1000 delegates have been appointed to attend, representing Government departments, foreign Governments, and Overseas Dominions. The proceedings will be held in six sections, with presidents named below: (*a*) Sanitary Science and Preventive Medicine, Sir George Newman; (*b*) Engineering and Architecture, Sir Charles T. Ruthen; (*c*) School Hygiene, Lord Eustace Percy; (*d*) Personal and Domestic Hygiene, Councillor Ellen C. Wilkinson, M.P.; (*e*) Hygiene of Food, Sir William Hardy, F.R.S.; (*f*) Hygiene in Industry, Alderman Sir Charles Wakefield. Seven conferences will be held:—(1) Representatives of Sanitary Authorities. President: The Lord Mayor of London (Sir W. Pryke). (2) Representatives of Port Sanitary Authorities. President: Mr. Victor Brown. (3) Medical Officers of Health President: Dr. G. F. Buchan. (4) Engineers and Surveyors. President: Mr. G. W. Humphreys. (5) Veterinary Inspectors. President: Alderman W. Phené Neal. (6) Sanitary Inspectors. President: Sir William J. Collins. (7) Health Visitors. President: Mrs. Hilton Philipson, M.P. Joint Session with the Conference on Maternity and Child Welfare. President: Lady Forster of Lepe. Among the subjects to be discussed are preventive medicine from various aspects, rheumatism and its results, the relation between sanitation and parasitic infections in the tropics, new streets and buildings by-laws, concrete houses, recommendations made to the Board of Education Advisory Committee with reference to the introduction of physiology into schools, progress in the dairy industry, factory medical service, biological treatment of sewage, and the Public Health Acts—a plea for consolidation. On July 5th, at 3 P.M., the inaugural address to the congress will be delivered in the Guildhall by Mr. Neville Chamberlain. On July 7th, at 8 P.M., Prof. C. E. A. Winslow, of Yale University, will give an address on Appraisement of Health Administration, at the Institute. The dinner in celebration of the jubilee of the Institute will be held in the Hotel Cecil on July 8th, at 7.30 P.M., Mr. Neville Chamberlain in the chair. Further particulars of the social and other functions to be held in connexion with the Congress may be obtained from the Secretary at the Institute, 90, Buckingham Palace-road, London, S.W. 1.

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning*

## SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W

THURSDAY, July 1st.—5 P.M., Annual General Meeting of Fellows.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W

MONDAY, June 28th, to SATURDAY, July 3rd.—Special demonstration in clinical ophthalmology by Mr Doyne on Thursday at 12 noon at the Royal London Ophthalmic Hospital, City road, E.C This demonstration is open to all members of the medical profession, without fee —ALL SAINTS HOSPITAL, Vauxhall Bridge-road, S.W Special Course in Urology Clinical and Cystoscopic Demonstrations on Monday and Wednesday afternoons and evenings. Thursday and Saturday afternoons. Special lecture at 2 P.M., June 30th by Mr J C Ainsworth Davis, "Renal Tuberculosis." Further information from the Secretary, Fellowship of Medicine

NORTH EAST LONDON POST GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham N

MONDAY, June 28th —10 A.M. Surgical Out patients Mr W E. Tanner 10 30 A.M., Gynæcological Operations Mr A. E. Giles Throat, Nose, and Ear Operations Mr W. Ibbotson, 2 P.M., Medical Surgical, and Gynæcological Clinics Operations. *6 30 P.M., Venereal Department*

TUESDAY —2 P.M., Medical, Surgical Throat, Nose and Ear Clinics, Operations 3 P.M., Demonstration of cases Illustrating Types of Mental Diseases Dr J E. C Laing at the Colney Hatch Mental Hospital New *Southgate, N*

WEDNESDAY —10 30 A.M. Surgical Operations Mr E. Gillespie 2 P.M., Medical, Eye, and Skin Clinics, Operations. 6 30 P.M., Venereal Department.

THURSDAY, July 1st.—10 30 A.M., Dental Out patients Mr E. S Pierrepont 2 P.M., *Medical, Surgical and* Throat, Nose and Ear Clinics, Operations. 5 P.M., Operations.

FRIDAY —10 30 A.M., Eye Operations Mr N Fleming 2 P.M., Surgical, Medical, and Children Clinics. Operations. 3 P.M., Dr G E. *Sundell Cases of Children's* Disease in the Wards. 6 30 P.M., Venereal Department.

CANCER HOSPITAL, Fulham road S.W

WEDNESDAY, June 30th.—4.30 P.M., Mr C E. Shattock Malignant Disease of the Tongue.

FRIDAY, July 2nd —4.30 P.M., Dr R. Knox: Recent Developments in Diagnosis of Gall Bladder Lesions

LONDON SCHOOL OF DERMATOLOGY, ST JOHN'S HOSPITAL, Leicester-square, W C.

TUESDAY, June 29th.—5 P.M., Dr A. C. Roxburgh Warts

THURSDAY —5 P.M., Dr S. E. Dore: Mycosis Fungoides.

# Appointments.

BANKS, H S., M.B., Ch.B. Glasg. *D P H.*, has been appointed Superintendent of Leicester City Hospital and Isolation Sanatorium.

DUFF, D, F R.C.S. Edin., F R.F.P.S Glasg., Visiting Surgeon, Glasgow Royal Infirmary Lecturer and Examiner in Clinical Surgery, University of Glasgow

LEVI, DAVID, M.S. Lond., F R.C.S. Eng., Surgical Registrar to St. Mary's Hospital.

MCGIBBON, R. T., M.B, Ch.B Glasg., Professor of Anatomy, University of Saskatchewan, Saskatoon, Sask., Canada

PARKER, W, M.B., Ch.B Edin., D.P.H., County Medical Officer for Worcester.

PASSEY, RICHARD DOUGLAS, M.D, B S Lond., to the new chair of Experimental Pathology and Director of Cancer Research in the University of Leeds.

ROBINSON, J S, M.B, B Ch. Dub F R.C.S Edin., Honorary Surgeon and Orthopædic Surgeon, Cheltenham General and Eye Hospitals.

SULLIVAN J., M B., Ch.B Edin., D.P H., Medical Officer of Health for Fulham.

WILLIAMSON, BRUCE, M.D Edin., M.R.C.P Lond., Hon. Physician in charge of the Out Patients Department at the Royal Northern Hospital, Holloway

Salford Royal Hospital: CHANCE, O., M.B., Ch.B. Dub., and ECCLESTON, C, M.B., Ch.B Manch., House Surgeons. BROADHURST, W, M.B., Ch.B Manch., Casualty *House* Surgeon.

# Vacancies.

*For further information refer to the advertisement columns*

*Association of Surgeons of Great Britain and Ireland, 51, Wimpole street W* —£350 Surgical Scholarship

*Bangor, Carnarvonshire and Anglesey Infirmary* —H.S. £200

*Bedford County Hospital* —Asst H.S. £150

*Bethnal Green Hospital, E* —Asst. M.O 's £100

*Birmingham University* —Walter Myers Travelling Studentship. £300

*Brighton Royal Sussex County Hospital.*—H.S. £150

*Cape of Good Hope.*—M.O H £1100

*Cheyne Hospital for Children, Chelsea, S W* —Hon. Surg

*Durham County Hospital* —Hon. Ophth. Surg.

*Exminster, Devon Mental Hospital.*—Jun. Asst. M.O £300

*Hospital for Consumption and Diseases of the Chest, Brompton, S W* —Res. M.O £000 Also H P £50 for six months.

*Indian Research Fund Association, Simla* —Research Workers on Malaria, also Entomologist. Each at rate of Rs.1500 per mensem.

*Ipswich, East Suffolk and Ipswich Hospital.*—H P and three H S 's. Each £100

*Kolar Gold Field Hospital, South India.*—Third Asst. M.O

*London Lock Hospital, 283, Harrow road, W* —Second H.S At rate of £150

*London Skin Hospital, 40, Fitzroy-square, W* —Hon. Phys.

*London Temperance Hospital, Hampstead-road, N W* —Cas. O At rate of £120 Also H.P At rate of £100

*Manitoba University* —Asst. Prof. of Anatomy $3000

*Miller General Hospital for South East London Greenwich road, S E* —Hon. Phys. to Special Dept. for Children

*Newcastle-upon Tyne, Hospital for Sick Children.*—Hon. S. and Hon Ophthal. S.

*Oxford, Warneford Mental Hospital.*—Second Asst. M.O £250.

*Royal Free Hospital, Gray's Inn-road, W C* —Cas. O £150

*St Paul's Hospital for Skin and Genito-Urinary Diseases, Endell street, W C* —H.S. £200

*Scarborough Hospital and Dispensary* —Two H S.'s. At rate of £125

*Sheffield Royal Hospital.*—Vacancies on Resident Medical and Surgical Staff. At rate of £80

*Sheffield Royal Infirmary* —Two H.S.'s., H.P., Asst. Cas. O. and Ophth. H.S. All at rate of £80

*University of London.—External Examiners*

*West London Hospital, Hammersmith-road, W* —Res. Asst S. £200

The Chief Inspector of Factories, Home Office, Whitehall, S.W, announces the following vacant appointments for Certifying Factory Surgeons Berwick (Northumberland), Sunderland, Neilston (Renfrewshire)

The Secretary of State for the Home Department gives notice of vacancies for Medical Referees under the Workmen's Compensation Act for the Districts of the Pocklington and Selby County Courts (Circuit No. 15) and the Beverley, Bridlington, Goole, Great Driffield, Howden, and Kingston-upon-Hull County Courts (Circuit No. 10), and the Districts of the Consett, Durham Seaham Harbour, and Sunderland County Courts (Circuit No 2).

# Births, Marriages, and Deaths.

## BIRTHS.

COOKE.—On June 19th, at Herne House, Petersfield, Hants, the wife of Dr R. Campbell Cooke, of a daughter

COYTE.—On June 14th, at Harley-street, the wife of R. Coyte, F R.C.S., of a daughter

REA.—On June 15th, at Harley-street, the wife of R. Lindsay Rea, F R.C.S., of a daughter

SAWDAY —On June 15th the wife of A. Ernest Sawday, M B., B.S. Lond., of Hartington-street, Derby, of a son.

STEPHENS.—On June 15th, at Terrace Houses, Richmond Hill to Celia Mary Colquhoun Macnell, M.B., Ch.B., wife of Cromwell A. Stephens—a son.

TUCKER.—On June 18th to Ena Mildred Tucker, M.R.C.S., L.R.C.P., the wife of Robert L. Tucker, of Compayne-gardens, Hampstead—a son.

## MARRIAGES.

DAVIDSON—BALMER.—On June 17th, at Eccles Congregational Church, Alexander Whyte Davidson, M.C., M B., F R.C.S.E., to Elizabeth Thubron, third daughter of Arnold W Balmer, Esq, Barrister-at Law, and Mrs. Balmer, of Eccles, Lancs

## DEATHS.

TURTLE.—On June 14th suddenly, at Peckham Rye, S E., Frederick Wenman Turtle, M.D, aged 61

*N.B —A fee of 7s 6d is charged for the insertion of Notices Births, Marriages and Deaths.*

# Notes, Comments, and Abstracts.

## THE TEACHING OF CONTRACEPTIVE METHODS AT WELFARE CENTRES.

IN the debate in the House of Lords on April 28th upon the attitude of welfare centres to artificial birth control several points of medical interest were raised. The motion was as follows: "That his Majesty's Government be requested to withdraw all instructions given to, or conditions imposed upon, welfare committees for the purpose of causing such committees to withhold information from married women in their district, when sought by such women, as to the best means of limiting their families." Into general questions raised in the debate, such as the relation between over-population and wars, the decline of the white races, under-population in France, the differential birth-rate in this country, &c., it would be irrelevant to enter here. Since, however, the motion was carried by 57 votes to 44, the strictly medical issues involved deserve scrutiny. Of these there were three, two occurring in the speech of the Archbishop of Canterbury and one in that of Viscount Fitzalan of Derwent.

According to the Archbishop of Canterbury's interpretation of the motion, there would follow from its enactment an intolerable compulsion on the officers in charge of welfare centres. There would be placed upon them the obligation to give information on contraception, even against their better judgment, if ever and whenever that information were asked for by a patient. "The medical man or woman," said the Archbishop, "needs to be protected against having that novel obligation laid upon him or her to give advice on the subject of contraception, which he or she might not wish to give." From these words the Archbishop would seem to envisage the possibility of doctors being legally compelled to give contraceptive information to women for whom there was no medical indication for such knowledge—women proposing to undertake a life of prostitution, for instance. It is, of course, highly unlikely that Lord Buckmaster ever contemplated anything of the sort. The criticism might well have been avoided if a clause such as, "at the discretion of the medical officer," or "if the applicant be considered on medical grounds to require such information," had been incorporated in the motion. It is important that if the matter be further discussed in the House of Commons, the doctor's liberty of action be safeguarded by some such clause.

The second point of medical interest raised by the Archbishop of Canterbury was that the Ministry of Health did not expect, indeed did not wish, its regulations on the matter of welfare centres and birth control to be acted upon too strictly. The regulation in question runs as follows: "It is not the function of an antenatal centre to give advice in regard to birth control, and exceptional cases, where the avoidance of pregnancy seems desirable on medical grounds, should be referred for particular advice to a private practitioner or hospital." The Archbishop then said that in order to satisfy himself as to whether the Ministry of Health intended this regulation to be taken literally he had made inquiries of "the highest authorities" of the Ministry, of whose replies he had made a memorandum. The memorandum need not be reproduced in full. Two short excerpts will be sufficient to illustrate the point: "In all cases attending the clinics where information is necessary on medical grounds, advice is always given by the doctor irrespective of any request on the part of the mother"; and, "The extreme medical cases in which another birth would be likely to prove disastrous for the mother are few and far between. Such cases would not ordinarily attend a maternity or infant welfare centre, but, if and when they did, it may be safely assumed that the mother would be advised as to the right course to adopt in order not to have any more children." It is clear that the attitude of these "highest authorities" of the Ministry of Health interviewed by the Archbishop is not consistent with the regulation by which medical officers of welfare centres are supposed to be bound. The Archbishop is justified in his view that the regulation is not expressed in the happiest phraseology, and if the Ministry of Health could see its way to revising the wording of this regulation, a source of considerable and not ill-grounded misunderstanding would be removed.

Viscount Fitzalan raised a point of closer medical interest by reciting a list of names of distinguished medical men and women who are opposed to artificial birth control. The grounds upon which this opposition is based seem to resolve themselves into four—that contraceptives are useless in preventing conception, that they produce local disease, that they cause sterility, and that their use is followed by various psychoneuroses. It is to be noted, however, that medical men and women who work in birth control clinics claim that when women desiring information on contraception receive the skilled supervision (whether from qualified medical women or from trained midwives) which is made available at these clinics, few, if any, of them suffer from the above complications. This fact suggests the possibility that some persons, who, on the grounds of its medical harmfulness, are opposed to artificial birth control, may fail to distinguish between the injury following the promiscuous use of pessaries, bought through advertisements or from shops, which are adjusted without proper medical advice or supervision, and the harm that results from their use when properly fitted by a competent person after the pelvic examination and inspection of the cervix has been properly performed. This, we understand, is the routine at the clinics. This distinction is an extremely important one to establish before the technique of contraception, or, indeed, any technique is condemned on medical grounds. It would be hardly logical or fair to use as an argument in favour of not extending wide medical supervision to the use of contraceptives, the fact that the absence of such supervision has in the past proved disastrous. Statistical evidence on the question is clearly required. At present the only sources of adequate statistical information as to the harmfulness or otherwise of the use of pessaries when properly fitted seem to be the various birth control clinics under medical charge. It would therefore be both profitable and relevant if the Ministry of Health were to institute an impartial investigation into the statistics now in possession of these various clinics. From such an inquiry there might emerge results which justify the attitude of those who were quoted by Viscount Fitzalan as opposing artificial birth control on medical grounds; on the other hand, the results might well be such as to convert an argument against contraception which the prestige of its celebrated opponents has invested with importance, into a compelling argument in favour of that extension of the existing medical supervision of birth control which is demanded by Lord Buckmaster in his motion.

There has recently been published a pamphlet on the management of a birth control centre,[1] written by a lay worker with four years' experience as superintendent of the Walworth Women's Welfare Centre. In this pamphlet stress is rightly laid on the importance of proper professional direction in the matter of instructing poor mothers in means of birth control. The importance of such supervision is emphasised in view of the enormous trade now done by unscrupulous firms and shops which specialise in the sale of contraceptive devices, usually at extravagant prices. Of the harmfulness of this trade there can be no shadow of doubt. The pamphlet is clearly written, and contains no birth control propaganda. It is issued with the sole object of providing practical assistance to those who agree with the methods and objects of a Society for the provision of birth control clinics, and who wish to create other centres like the few—there are only six in London and the provinces—now administered by this Society.

## COLONIAL HEALTH REPORTS.

### *British Guiana.*

ACCORDING to the report for 1924 prepared by Mr. B. H. Bayley, Second Assistant Colonial Secretary, the population on Dec. 31st was estimated as 301,204—157,772 males and 148,132 females. The birth-rate for the year was 32·4 per 1000 of the population distributed as follows among the several races representing the community: Europeans other than Portuguese, 14·1; Portuguese, 23·9; East Indians, 34·5; Chinese 27·5; Aborigines, 34·3; blacks 29·9; mixed races, 37·4. Of the births registered 54·8 per cent. were illegitimate. The aggregate death-rate was 25·6 per 1000, or, taking the various races, among Europeans other than Portuguese, 13·1; Portuguese, 29·8; East Indians, 27·7; Chinese, 20·7; Aborigines, 30·3; blacks, 24·7; mixed races, 20·2. The number of children who died under 1 year of age was 1606, or 165 per 1000. The general health of the colony was good, and there were no epidemics during the year. The climate of the colony (which it is interesting to note is the only British possession on the South American continent), although warm, is distinctly cooler than that of other British colonies in tropical latitudes, and Europeans and other northern races enjoy consistently good health. The mean temperature throughout 1924 was 80·5° F. The heat, which is greatly tempered by cooling breezes from the sea, is felt most from July to October owing to decreased force of these breezes. There are annually two wet seasons, from April to the middle of August and during December and January The rainfall in 1924 was 83 51 inches, as compared with an average over the past 44 years of 91 9 inches.

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[1] On the Management of a Birth Control Centre. By Evelyn Fuller. With an Introduction by the Hon. Miss Graham Murray, O.B.E. The Weardale Press: 26, Gordon-street, W.C.1. 1s.

### *St. Lucia.*

In his report on the affairs of the colony for 1924 Mr G D Mackie, Acting Administrator, states that the estimated population at the end of December was 51,304. The birth rate (excluding stillbirths) was 35·7 per 1000 of the total population and the death rate (excluding stillbirths) 21 4 per 1000 The infant mortality rate was 132 5 per 1000, the primary cause of death being intestinal diseases due to worms and improper feeding. The year was a comparatively healthy one, no epidemic having occurred. The principal causes of death, in order of frequency, were; intestinal parasites, 116, senile decay, 96; malaria, 86 tuberculosis, 75, pneumonia, 61; syphilis, 55; infant debility, 31. The intensive treatment of hookworm disease was continued by the Rockefeller International Health Board during the year The following hospital accommodation is provided: Victoria Hospital, 116 beds; Soufrière Casualty Hospital, 8 beds Vieux Fort Casualty Hospital, 8 beds, Dennery Casualty Hospital, 7 beds; Pauper Asylum (for infirm and incurable patients), 98 beds; Leper Asylum 30 beds; *Lunatic Asylum, 100 beds. St. Lucia,* which is situated at a distance of 24 miles to the south-east of Martinique and 21 to the north-east of St. Vincent, is 24 miles in length and 12 at its greatest breadth; its circumference is 150 miles and its area 233 29 square miles rather less than Middlesex. The port of Castries is one of the best harbours in the West Indies. The town of next importance is Soufrière Just below Soufrière Bay stand the remarkable twin peaks known as "The Pitons," rising sheer from the sea to a height of 2619 feet in the case of the Gros Piton and 2461 feet in that of the Petit Piton. The boiling sulphur springs from which Soufrière gets its name are situate at Ventine, 2½ miles south-east of that town The climate is healthy Temperature varies between 70° F, in the cool season, from December to May, to 90° in the remainder of the year The rainfall at Castries for the year was 82 88 inches—2 25 inches above the average for 25 years A comfortable hotel has been established, and by judicious advertising there is no reason why the colony should not become a winter resort for visitors from Europe and North America.

### *Trinidad and Tobago.*

Mr T A. V Best, C.M.G, Colonial Secretary, in his report for 1924, gives the estimated population of the two islands on Dec. 31st as 381,753 The white population is chiefly composed of English, French, Spanish, and Portuguese. The large majority of the inhabitants are natives of the West Indies of African descent, the balance being made up of East Indians, estimated at 123,903 and a small number of Chinese. The birth-rate for the year was 33·66 per 1000 and the death rate 20·02 per 1000 The infantile mortality rate was 124 07 per 1000 births. The death rates from the principal diseases were diarrhœa and enteritis, 1 38 per 1000; malaria, 1 90; tuberculosis, 1 26; dysentery, 0·60; enteric fever, 0 55; ankylostomiasis, 0 82 The year was a very healthy one, the birth rate being high and the death-rate and infantile mortality reaching a low record for the colony Venereal clinics on modern lines continue to be well attended at Port of Spain and San Fernando. On the recommendation of the central board of health, drainage schemes for the control of malaria are being continued in the country districts, and minor measures of a similar nature were maintained. The *intensive* treatment of hookworm disease was continued by the Rockefeller International Board of Health. The central board of health coöperated by enforcing the establishment of latrines in advance of the treatment in the areas about to be operated in. The following hospital accommodation is provided: Colonial Hospital, Port of Spain, 340 beds; the San Fernando Hospital 123 beds; the Government district hospitals at Tobago, and at Arima St Joseph Tacarigua, Couva, Princes Town, and Cedros 248 beds. There are also small temporary hospitals at Sangre Grande, Mayaro and Toco. The climate is healthy and by no means hurtful to Europeans, provided reasonable precautions are taken. The average temperature during the day is 84° and during the night 74° F The average rainfall in 1924, from records taken at 110 stations, was 60·42 inches.

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## HARRISON'S "POPULAR MEDICAL ERRORS"

AMONG the pioneers of labour legislation the name of James Bower Harrison M D F R C.S., of *Broughton* Manchester, deserves honourable mention. Descended through his father, the Rev William Harrison from a long line of preachers who dated back to the days of *the Restoration*, he was himself in the best sense a moral reformer By a paper in the *Dublin Medical Quarterly* and a letter, addressed to Lord Shaftesbury, on the expediency of submitting certain trades and manufactories to medical inspection, he was largely instrumental in leading to a Government inquiry into the conditions of child labour in unhealthy occupations. The result of this inquiry was the Act of 1847 restricting the hours of women and young persons to about ten a day But Harrison was not only a social reformer, he laboured assiduously in such leisure as he could snatch from the routine of a large practice, surgical and general, to disseminate rational views of medical matters among laymen. His publication 'Popular Medical Errors' published in 1851 after appearance as a series of articles in *Chambers's Journal*, had a great vogue. Merely to copy the headings is to obtain a curious bird's-eye view of what domestic medicine consisted in the early Victorian era and what superstitions Harrison proposed to scotch. Though quite a number of the old fallacies are still matters of popular belief, especially in nurseries, but frequently among hospital out-patients, yet there is a mellow completeness in the ancient body of error which the present is without. Thus some 80 years ago the following things were so commonly believed as to make it worth Harrison's while to deal with them: That lunatics are influenced by the moon, that cooling medicines should be taken at particular periods of the year, that hair can turn gray in a night, that a sound rather than a poor constitution is compatible with severe chronic disease, that proud flesh ' filled up wounds that corns have roots as do trees, that hydrophobic patients bite those around them and should be smothered by the doctor, that a loud voice is a proof of strong lungs, that the alcoholic are liable to spontaneous combustion, that milk produces phlegm in coughs that every seven years there is a change in the constitution, that most skin troubles are "scurvy,' that scarlet fever shades off into scarlatina, that blood removed by the application of leeches is 'as black as your hat," that leeches placed on the eyelids weaken the sight that "cinder tea' is good for children, that the 'ninth day" of a confinement is very important, that a man may put out his neck and a skilful friend in the hunting field may at once put it in,' that the eyes can be taken out and replaced by ophthalmologists, that acute boils and gouty attacks are healthy, that there are drawing salves and strengthening" plasters, that 'mothers marks' are photographs of ideas held by mothers during the prenatal period that bones are brittle in winter that *red* flannel is a sovran remedy, that poison resides in the heart of the mussel which should be removed, that "galvanic' rings cure rheumatism and fits that "a narrow swallow" may prevent the taking of pills, that babies suffer from inward fits" and that medical men know some secret trick by which they avoid contagion.

It should be noted that it was not only the ignorant and uneducated who held these beliefs and passed them down till they became traditional wisdom, but educated men in the absence a century ago of any general scientific training held devoutly to the truth of some of these comical ideas. The smothering of a hydrophobic is described in one of Blackmore's novels as a lurid but logical incident, and both Dickens and Marryat employed spontaneous combustion to remove disagreeable persons. Dr Harrison's enumeration of popular medical errors of which the above is only a long quotation contains delightful colloquial illustrations showing him to be a man of humour as well as shrewd observation The book was written while he was quite a young man and preceded a great deal of popular writing on the medical aspects of industrial and social conditions. It is probable that he owed his access to many lay journals to his cousin Harrison Ainsworth also a Manchester man who, in addition to being a popular novelist, was associated as editor or regular contributor with many newspapers and magazines.

## THE MEDICINAL VALUE OF WILD HERBS.

THE use of many of our wild plants as articles of food as well as for their medicinal value has nowadays almost completely disappeared with the establishment of the potato as a staple article of diet and the replacement of the itinerant herbalist by the patent medicine vendor Such wild and apparently useless plants as the chickweed or the nettle have, however a definite food value, and Mrs. M Grieve, in a recent little book[1] on wild vegetables, salads and their vitamin value discusses many neglected varieties giving frequent delightful quotations as to the medicinal value of the plants she describes Thus the wild cabbage, which grows freely on the cliffs at Dover, was regarded by Pliny as the most esteemed of all vegetables, and he recommended its use in 87 remedies. A decoction of yellow goat's beard was stated by Nicholas Culpeper, who wrote a famous book on herbs in the seventeenth century, to be "good for heart-burn, loss of appetite, disorders of the breast and liver." The same authority claimed great medicinal powers for various preparations of the leaves of succory or wild chicory. "The distilled water of the herb and flowers . . . . is good for swooning and passions of the heart." Lovage, an umbelliferous plant growing on the rocky coasts of Scotland, "helps the quinsey" and "removes spots and freckles from the face," says Culpeper. The scurvy grass growing on muddy sea-shores has some historic interest, for "scurvy-grass ale" was used by Captain Cook as an antiscorbutic in one of his voyages in the South Seas. The use of garlic as a household remedy is not altogether forgotten even at the present day, and the seed of the hedge garlic, known popularly as Jack-by-the-hedge, has been recommended for "poisons and venom and worms in children." Watercress, as has recently been pointed out by Dr. H. Scurfield, contains all three vitamins and should be eaten more than it is. Culpeper states that the juice of this plant mixed with vinegar is good for "the dull and drowsy." Shepherd's-purse made into a poultice was used by the same authority for "St. Anthony's fire." The leaves of the marsh mallow were stated by Tyron in his "Way to Health," published in 1683, to "cure near fifty diseases." The nettle is still gathered each spring by country dwellers and a tincture made from this plant has been recommended for various skin eruptions. Pepys relates having good nettle porridge placed before him as a guest. Perhaps some of these neglected medicinal plants may receive consideration at the hands of the committee now engaged in revising the British Pharmacopœia.

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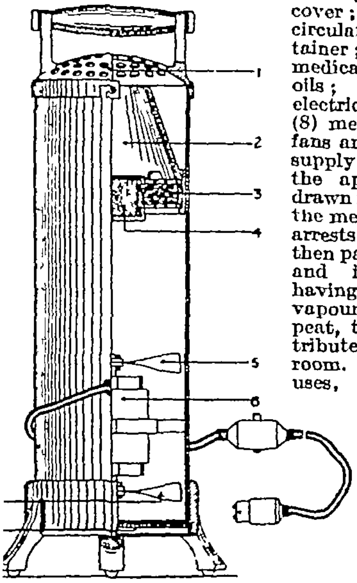
[1] Wild Vegetables and Salads and their Vitamin Value By Mrs. M Grieve F R.H.S. Assisted by E. Oswald. by the authors at Whin's Cottage Chalfont St. 1s. 6d.

## THE "DEODOS" AIR CLEANSER.

THE purpose of this apparatus is to purify and medicate the air of rooms and buildings by means of a vapour. The parts of the apparatus shown in the illustration are: (1) detachable perforated cover; (2) air-diverting cone; (3) circular perforated charcoal container; (4) central vessel for medicated peat and fumigating oils; (5) delivery fan; (6) electric motor; (7) suction fan; (8) medicated filter screen. The fans are worked from the electric supply of the building in which the apparatus is used. Air is drawn into the "Deodos" through the medicated filter screen, which arrests all solid impurities; it then passes over prepared charcoal and is deodorised. Finally, having been charged with the vapours of specially medicated peat, the perforated cover redistributes this new air into the room. In addition to its medical uses, which should be under the advice of a medical man, the "Deodos" may prove useful in clearing the internal atmosphere of tobacco smoke, odours of cooking, new paint, and so forth, as well as in perfuming an apartment. The manufacturers are the International Deodoriser Syndicate, 69, Basinghall-street, London, E.C. 2.



## ESERINE IN GLAUCOMA.

*To the Editor of* THE LANCET.

SIR,—Cases treated in the course of work for the Blind Relief Association here confirm the value of eserine in the treatment of glaucoma.

A. B., woman, aged 45; glaucoma, practically no vision Treated in camp with eserine 1 gr. to ounce, pupils contracted, and after the third day was able to see the tent.

C. D., man, aged 30. Right eye destroyed; on left eye, glaucoma, little more than perception of light. After one treatment vision greatly improved, but field remained much contracted. Later brought to the Civil Hospital, where eserine was continued with field greatly improved.

Two cases with glaucoma, no sight. Both recovered sight after eserine six times a day. *One seen again after a year, sight quite good.* This case had not even P.L. originally.

Generally here the instillation of eserine is made two or three times a day in a strength of 4 gr. to ounce. The results indicate that it is a most valuable drug which should be given a good trial before operation. In one case at least where an operation was done first and eserine instilled afterwards no improvement took place.

I am, Sir, yours faithfully,

B. C. VACHHRAJANI, L.M. & S., B.M.S.,

Medical Officer, Thar Parkar Civil Hospital, Mirpurkhas, Sind, India; Chairman, Blind Relief Association.

May 1st, 1926.

*** The value of eserine in glaucoma is well recognised in this country. In some incipient cases it may be all the treatment required, in some chronic cases it may succeed in arresting the progress of the disease for months or even years, and in all acute or subacute cases it is of great use as one of the measures calculated to put the eye into the best possible condition for operation. On the other hand, it is now generally held that in the great majority of cases in which the diagnosis of glaucoma has been established, by far the best means to arrest a disease whose inevitable tendency is to advance to blindness is operative treatment, and that although eserine may be invaluable in some cases in which for any reason operation is out of the question, the latter is the only treatment which holds out a reasonable prospect of avoiding ultimate blindness.—ED. L.

## BRITISH SPAS.

*To the Editor of* THE LANCET.

SIR,—A rumour appears to have arisen to the effect that some of the British spas have been compelled to close down owing to coal shortage. As hon. secretary to the British Spas Federation I have communicated with all the resorts in the Federation and find that sufficient coal-supplies are everywhere available, and that every one of the British spas is giving full service to its visitors, and has every intention of continuing to do so.

The British spas have lately had to meet quite enough difficulties through foreign competition, adverse trade conditions and railway restrictions, without having to suffer the injury of baseless rumours. At Bath and Buxton, Cheltenham and Droitwich, Harrogate, Leamington and Llandrindod Wells, Strathpeffer and Woodhall Spa conditions are perfectly normal. Baths and treatments and entertainments are going on just as usual, and at the present moment thousands of people are finding health and enjoyment at the British spas.

I am, Sir, yours faithfully,

JOHN HATTON,

The Hot Springs, Bath, June 19th, 1926. Hon. Secretary.

## "ARDENTE-ACOUSTIQUE" ELECTRICAL AIDS FOR THE DEAF.

MR. R. H. Dent (95, Wigmore-street, London, W.) has submitted for our inspection some improved forms of his well-known apparatus for use by the deaf, constructed on the ordinary telephone principle. The first is a new small ear-piece, the size of a shilling, and said to be the smallest yet made; it is simple, light, and easily fits into the ear and does away with the use of lorgnettes, head-bands, and so forth. The second piece of apparatus is a small microphone about the size of a florin which can be used for general conversation or in a large room or hall. It is so constructed that it gathers sounds reaching it from wide angles, and is more powerful than the old box types. A special auditorium type of microphone is designed to collect sounds from any part of a church or public hall in a remarkably clear and true-to-tone manner. Another new novelty made by this firm is a small battery case of special material constructed to keep out damp and prolong the life of the battery. A feature of the "Ardente-Acoustique" aid for the deaf is that they are remarkably free from "buzz" or metallic timbre. The instruments are made in a variety of forms, and each is adapted to the needs of each particular case.

## SURGICAL FOOT-GEAR.

A West End branch of Scholl's Foot Comfort Service has been opened at 93, Regent-street, with the object of working in coöperation with the medical profession. An expertly trained staff will attend daily to carry out under medical instruction the fitting of the firm's arch supports and other corrective appliances. Thus in prescribing for foot ailments medical men will have at their disposal an organised service to render assistance in the carrying out of their instructions.

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DONATIONS AND BEQUESTS.—Mrs. Eliza Mary Eccles, of Preston, besides other large bequests, gave £1000 each to the Preston and County of Lancaster Royal Infirmary to endow a "John Christopher Eccles" bed, and the United Kingdom Beneficent Association; £500 each to the Royal Cross Deaf and Dumb School, Preston, and the Preston Institute for the Blind.

MEDICAL COLLEGE